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*For forty-eight years*—IRON TRADE REVIEW

December 4, 1930

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# KOPPERS
## CONSTRUCTION COMPANY
PITTSBURGH, PA.

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# STEEL

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PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

Steel Now Standard Material for Hangars; Design Is Studied. Page 61.

## THIS WEEK:

*A NEW department appears in this issue of* STEEL, *page 32, dealing with current developments in the structural steel industry. While it is written in New York, where 20 per cent of the structural steel tonnage of the country is consumed, it will have a much broader significance, as many of the developments and problems peculiar to New York are applicable to the entire country. In July, 1927, this publication introduced a department dealing with the automotive industry in relation to steel. Subsequently it started "Steel Angles from Chicago" a department giving steel information referring to the railroads.*

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# RYERSON

STEEL-SERVICE

Volume 87 Number 23

STEEL

*For forty-eight years*—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

# This Week in Steel

AS IF December, itself a blustering hazard even in the best of years, were not sufficient to chill the improved morale which business has been acquiring in recent weeks, congress must convene and add to the tumult. No direct legislative threat is implied by the final session of the 71st congress—there will be no tinkering with the tariff and no major financial legislation unless it be an unlooked-for extension of this year's 1 per cent reduction in income taxes —but the multiplicity of issues pressing for consideration insures a boisterous session until March 4, and perhaps into the summer (Page 23). Primarily, the short session of congress is for passage of the appropriation bills requisite for the operation of the federal services, but what a task faces senate and house leaders in attempting to divert attention from such controversial measures as the world court, Muscle Shoals, Wagner unemployment bills, regulation of the alleged power trust, additional appropriations for highways and the federal farm relief board, elimination of the "lame duck" session of congress and the plea of the railroads that pipe, steamship and bus lines be placed under closer control. Even though the government budget for 1932 calls for four billion dollars, it might be cheaper for the country were congress to appropriate it and go home.

## Economics Keynote of Hoover Message

Hoover, the engineer and economist rather than Hoover the politician, dictated the President's message to congress Tuesday, prompting many truisms with which varying shades of politics can agree. Among other things the President said (Page 23): Economic depression cannot be cured by legislative action or executive pronouncement; economic wounds must be healed by the action of the cells of the economic body—the producers and consumers themselves. . In the larger view, the major forces of depression now lie outside the United States and our recuperation has been retarded by unwarranted fear of these forces. . I recommend that congress institute an inquiry into some aspects of the economic working of the antitrust laws; I do not favor repeal of the Sherman act. . Most rigid economy is necessary to avoid increase in taxes. There is need for revision of our immigration laws upon a more limited and more selective basis, flexible to the needs of the country. .

## Year-end Declines Not Abnormal

For business in general, the trend lines continue downward, which is not abnormal except in degree for the closing weeks of the year. In steel, the further shrinking of consumers' requirements for immediate shipment is evidenced by another decline in operating rates (Page 92), although the railroads continue to build up mill backlogs of rails and car material for early 1931 rolling (Page 85). It is probable the un-

Sixty five tons of steel were required for this steel wye which was fabricated by the Commercial Boiler Works, Seattle, for the Diablo dam project of Seattle. The section here shown is 33 feet high and 30 feet across at its broadest.

filled tonnage of the United States Steel Corp. will show a rise as of Dec. 31. A few leaders of the industry now believe the recovery in January will come late in the month instead of early. . . . In England it is believed (Page 112) that prices are now plumbing bottom and any turn will be for the better. Belgium, also battling depression, reduced mill wages 2½ per cent Dec. 1 and will cut another 2½ per cent Jan. 1.

## Harsh Words for Wage Cutters

Were these Belgian steelmasters in the United States they would be branded "public enemies," a term reminiscent of Chicago's gangsters and applied by William Green, president of the American Federation of Labor, to industrial executives now reducing wages (Page 25). Steel is not one of the industries barbing Mr. Green's shaft. In fact, steel leaders themselves have opposed wage reductions in no uncertain terms. . . . As forecast here, unemployment is fading from the news except as holiday relief measures are organized locally. In many cities the present effort is to eliminate duplication of relief. . . . An important life insurance company will have representatives call at a specified number of homes in 40 widely distributed "key" cities Dec. 8 to "sample" conditions (Page 25).

## Building News Has Wide Appeal

There is something in "wearing the new" off an automobile that holds every man's attention. Only secondary is the average man's interest in building; it seems to awake in him a primal urge. New York and its metropolitan district, consuming one-fifth of all the country's structural steel, monopolize much of this interest (Page 32) while solving problems applying also to the other large cities. . . . Two hundred feet above the 86th story of the Empire State building, "highest" of New York's skyscrapers, the last rivet has been driven in the mooring mast, now being enclosed in aluminum and chromium-nickel steel. Braced for a side pull of 50 tons, it can withstand a 120-mile gale (Page 33). . . . Also for ground hangars steel is the accepted material, the problem being one of design only, to defeat wind currents upon craft being hangared. One plan makes use of a hexagonal structure which can be entered from any of its six sides (Page 61).

## Blowing Out Furnaces at Slower Rate

Some comfort may be derived from the fact the net loss of active blast furnaces in November was only four, while in October it was 15, in September 11, and in August seven. Lest the question arise whether there are any left to be blown out, 107 were in operation Nov. 30. Daily output in November is revealed as 62,180 tons, 11 per cent less than in October, and the lowest rate since August, 1924 (Page 28). . . . Business sentiment continues to improve and more signs of greater activity are abundant, despite curent records of lagging production (Page 36). Dr. David Friday sees the promise of prosperity in the spring but believes the lower price level is "a permanent thing in our lifetime." Profits, more dependent than ever on production, will have to come, according to this noted economist, from more and better machines (Page 35). . . . Voluminous briefs replying to previous "briefs" are the last shots in the Bethlehem-Sheet & Tube merger suit, the judge waiting until after the holidays to decide the case. (Page 24).

## Designing Theoretical Coke Plant

Last April a group of blast furnace and coke oven operators in the Chicago district erected a model blast furnace—on paper. A week ago the same group prepared, checked and approved new drawings, and erected a theoretical coke plant. Findings will be made available to the industry (Page 59). . . . Bleeders on blast furnaces no longer belch forth excess gas into the atmosphere. Furnacemen have a keener appreciation of gas as a fuel. Comparative costs of cleaning the gas are being studied carefully (Page 54). . . . Ductility and case toughness can be imparted to nitrided steels by a double heating method, but at the sacrifice of some of the original hardness. Clean steel, suitable containers and efficient equipment are essential to the successful application of this ammonia hardening process. Decarburization of the surface layer of metal, resulting in spalling or flaking, is a difficulty which nitriders are inclined to overlook or at least underestimate (Page 48).

## Ten Thousand Pocket Knives Daily

What visions of boyhood delight are conjured up by the description (Page 43) of the eastern plant which has applied the principles of mass production for the manufacture of pocket knives! Improved grinders and grinding methods, new stamping and forging processes, and modern heat-treating are useful aids. Even skilled cutlers have yielded to machine precision. . . . Mass production also explains the great strides made in the past two years by the steel stamping industry (Page 25). From 1927 to 1929, according to government reports, the expansion in establishments was 58.6 per cent, in wage earners 35.4 per cent, and in value of product—which was $175,000,000—43 per cent. It may be surprising, but that value of automobile stampings, at $30,000,000 in 1929, was only $100,000 greater than that of bottle caps.

# Congress Threat to Business Is Talk, Not Legislation

WASHINGTON — Business does not appear to be menaced by any major legislation at the final session of the 71st congress, which convened Dec. 1, but it remains to be seen whether sentiment, generally believed to be primed for a recovery from the slump of 1929-30, suffers a shock from the turbulent proceedings which are assured until March 4—and beyond if a special session is forced.

Only in exceptional cases will senators and representatives elected in November sit in at this session, hence the personnel of both houses is largely that elected in 1928 and the nominal control of the Republican majority continues in force. The practical deadlock in congress resulting from Democratic gains last month will not come into play until next December, except in event of a special session after March 4.

Normally, the time of the short session is consumed with the consideration of routine appropriation bills. If insurgents delay action on these measures, a special session will be necessary. To avert this, certain pet measures of insurgents will be considered at this session. Of these, the most important refers to Muscle Shoals and involves the question of power control.

### Tariff Changes Unlikely

It is a practical certainty there will be no tinkering with the tariff, although members of the new tariff commission come up for confirmation in the senate. There is likely to be no tax legislation, as the reduction in taxes applying to 1929 income was for that year only and it is understood it will not be extended.

Conferences have been held by Chairman Hawley of the house ways and means committee, Secretary Mellon and Under-Secretary Mills concerning this 1 per cent reduction, and it is probable that the treasury's views will be included in a report to congress Dec. 4. The decision will be made entirely upon the basis of the probable losses in federal revenue for the remainder of this fiscal year ending June 30.

Submission of American adherence to the world court may precipitate a legislative battle reminiscent of the days when the league of nations was an issue. The proposal to convene congress early to eliminate "lame ducks" may be forced up by insurgents. Additional appropriations for the federal farm board, $60,000,000 for seed loans to drought-stricken areas, the Wagner unemployment bills, increased appropriations for public roads, and prohibition promise to contribute to a stormy session, the greatest danger being the forcing of a special session.

What form it will take is as yet undecided, but the American Association of Railway Executives may prompt the introduction of legislation to grant the relief they are now seeking from the competition of pipe, steamship and bus lines. One angle of the question is the desire of the railroads to divorce the oil industry and its pipe lines. A bill to put coastal steamship lines under control of the interstate commerce commission is possible. Still another potential one would permit the railroads again to operate ships on the Great Lakes. The chances of this batch of legislation at the current session are not bright, but they will provoke wanted discussion.

President Hoover's appointment of William N. Doak, vice president and legislative agent of the Brotherhood of Railroad Trainmen, as secretary of labor to succeed James J. Davis, elected senator from Pennsylvania, may result in acrimonious debate in the senate.

Mr. Hoover is the first President not to name his secretary from the ranks of the American Federation of Labor, bringing down the denunciation of William Green, president of the federation. It is not regarded as significant that Mr. Doak's organization has just voted to initiate campaign for a 6-hour work day with no reduction in pay.

# Co-Operation, Courage, Faith Will Cure Depression, Hoover Says

**President Hoover devoted a substantial portion of his message to congress Dec. 2 to a discussion of the economic situation. He said in part:**

DURING the past 12 months we have suffered with other nations from economic depression. The origins of this depression lie to some extent within our own borders through a speculative period which diverted capital and energy into enterprise. Had over-speculation in securities been the only force operating, we should have seen recovery many months ago, as these particular dislocations have generally readjusted themselves.

¶ Other deep-seated causes have been in action, however, chiefly the world-wide overproduction beyond even the demand of prosperous times for such important basic commodities as wheat, rubber, coffee, sugar, copper, silver, zinc, to some extent cotton, and other raw materials. The cumulative effects of demoralizing price falls of these important commodities in the process of adjustment of production to world consumption have produced financial crises in many countries and have diminished the buying power of these countries for imported goods to a degree which extended the difficulties farther afield by creating unemployment in all the industrial nations.

The political agitation in Asia; revolutions in South America and political unrest in some European States; the methods of sale by Russia of her increasing agricultural exports to European markets; and our own drought —have all contributed to prolong and deepen the depression.

¶ In the larger view the major forces of the depression now lie outside of the United States, and our recuperation has been retarded by the unwarranted degree of fear and apprehension created by these outside forces.

¶ There are many factors which give encouragement for the future. The fact that we are holding from 80 to 85 per cent of our normal activities and incomes; that our major financial and industrial institutions have come through the storm

unimpaired; that price levels of major commodities have remained approximately stable for some time; that a number of industries are showing signs of increasing demand; that the world at large is readjusting itself to the situation; all reflect grounds for confidence.

We should remember that these occasions have been met many times before, that they are but temporary, that our country is today stronger and richer in resources, in equipment, in skill, than ever in its history. We are in an extraordinary degree self-sustaining, we will overcome world influences and will lead the march of prosperity as we have always done hitherto.

¶ Economic depression can not be cured by legislative action or executive pronouncement. Economic wounds must be healed by the action of the cells of the economic body—the producers and consumers themselves. Recovery can be expedited and its effects mitigated by co-operative action.

That co-operation requires that every individual should sustain faith and courage; that each should maintain his self-reliance; that each and every one should search for methods of improving his business or service; that the vast majority whose income is unimpaired should not hoard out of fear but should pursue their normal living and recreations; that each should seek to assist his neighbors who may be less fortunate; that each industry should assist its own employes; that each community and each state should assume its full responsibilities for organization of employment and relief of distress with that sturdiness and independence which built a great nation.

¶ Our people are responding to these impulses in remarkable degree.

¶ I recommend that the congress institute an inquiry into some aspects of the economic working of the antitrust laws. I do not favor repeal of the Sherman act. The prevention of monopolies is of most vital public importance. Competition is not only the basis of protection to the consumer but is the incentive to progress. However, the interpretation of these laws by the courts, the changes in business, especially in the economic effects upon those enterprises closely related to the use of the natural resources of the country, make such an inquiry advisable.

¶ It is urged by many thoughtful citizens that the peculiar economic effect of the income tax on so-called capital gains at the present rate is to enhance speculative inflation and likewise impede business recovery. I believe this to be the case and I recommend that a study be made of the economic effects of this tax and of its relation to the general structure of our income tax law.

¶ There is need for revision of our immigration laws upon a more limited and more selective basis, flexible to the needs of the country.

## Mechanical Engineers Pledge Support to Col. Woods

New York—Problems of unemployment and consideration of engineering developments calculated to hasten a revival of industrial activity are occupying attention at the annual meeting of the American Society of Mechanical Engineers here this week.

Col. Arthur Woods, chairman of President Hoover's emergency committee on unemployment, speaking on Monday afternoon, emphasized the gravity of the present situation and appealed for support in his relief program. He cited notable cases of stabilization plans among individual industries and urged immediate consummation of plans now being contemplated by other organizations. Colonel Woods declared that the application to business of the same logical methods used in solving engineering problems would lead to the early and permanent stabilization of the business cycle.

Col. Paul Doty, acting president of the society, tendered Col. Woods a resolution through which members placed themselves squarely behind his relief program, and cited the beginnings already made in that direction.

## Briefs Replying to Briefs Filed in Merger Suit

Final steps in the trial of the Bethlehem-Sheet & Tube merger suit have been taken by counsel, each side filing "reply briefs" to briefs previously submitted to the court by respective opponents. The reply briefs review the salient features of charges and denials previously made. Plaintiff's latest brief contains an elaborate analysis of Price Waterhouse & Co.'s calculation on the maintenance and depreciation funds of Sheet & Tube and Bethlehem, concluding with the statement "certainly no comparison unfavorable to Youngstown can be drawn so long as Bethlehem keeps its policy wholly obscured by withholding the facts from which it could be determined."

"The record demonstrates," says the defendants' reply brief, "that the charges of fraud made with such cruel emphasis were wholly unsupported by facts; that the officers and directors of the Sheet & Tube company and of Bethlehem undertook a merger authorized by the statutes of Ohio and went about the business with the confidence and straightforwardness of experts in the steel business seeking just terms and employing wise and appropriate measures."

It is understood at Youngstown that Judge Jenkins may not decide the case until after Jan. 1.

## State License Plate Tonnages Attract Bidders

Purchasing department, Ohio State penitentiary, Columbus, O., will award contract soon for 1300 tons of sheet steel for 1931 state license plates. Bids have been received and Reeves Mfg. Co., Dover, O., is low at 2.86c; others bidding offered prices ranging closely to a mark of 3.01c. The latter group includes Youngstown Sheet & Tube Co. and Republic Steel Corp., both of Youngstown, O., American Sheet & Tin Plate Co., Pittsburgh, Empire Steel Corp., Mansfield, O., and Newport Rolling Mill Co., Newport, Ky.

A bid of 2.86c on this stock, which is usually No. 24 gage, single pickled, one-pass cold rolled, and annealed, indicates that less freight, quality and width extras, the base on the steel was about 2.20c. The majority of the bids, with this one exception, indicate a base of 2.35c, the present quotable market.

Indiana recently opened bids on license tag stock, threw out first bids, then received ones from 11 sheet makers ranging from 2.98c to 3.55c, f.o.b., Michigan City, Ind. Contract was awarded Continental Steel Corp., Kokomo, Ind., on a bid of 2.98c.

## Illinois Steel Rejects Milwaukee Plant Offer

Directors of Illinois Steel Co., Chicago, have rejected the offer of the city of Milwaukee of $3,000,000 for the Bay View plant of the steel company. Neither the price or terms is pleasing to the officials. The tract consists of 170 acres on the lake front at Milwaukee, adjoining the city sewage disposal plant. The company in 1918 gave an option at $5,000,000 which it considers a fair price.

The steel plant has been operated little for several years and the Illinois company is willing to sell and dismantle, but regards the present offer as too low. The city is expected to reopen negotiations.

## Form Light Metal Group

American Standards association, 29 West Thirty-ninth street, New York, has announced the formation of a light metal group with the Aluminum Co. of America, Pittsburgh, the first member.

It is expected that the creation of

this group will stimulate establishment of national standards and specifications covering the processes and products of the light metal industry, which include aluminum and magnesium, their alloys, and alloys of these metals with other metals.

## J & L Revises Tin Card

Jones & Laughlin Steel Corp., Pittsburgh, has issued a slightly revised classification of extras and differentials on coke tin, and tin mill black plates, dated Nov. 1. Differentials have been added for basis weights of 168, 175, 188 and 195 pounds.

For odd basis weights 6 cents replaces 4 cents to be added over the next lower regular basis price. A "satin" finish quality has been added and quantity extras for shipment at one time have been revised to read as follows: 10 cents per 100 pounds, under 5000 pounds to 2500 pounds; 25 cents per 100 pounds, under 2500 pounds to 1000 pounds.

## Stamping, Enameled Ware Industry Growth Large

Growth of the use of stamped and enameled ware is shown in the figures compiled by the census bureau, Washington, for 1929, compared with its figures for 1927.

The number of establishments increased from 365 to 579, or 58.6 per cent. Average wage earners increased from 28,594 to 38,716 or 35.4 per cent. Wages moved from $35,154,846 to $48,368,592, a gain of 37.6 per cent. Total value of stamped and enameled ware moved from $122,275,976 to $174,879,957, an increase of 43 per cent.

Detail of the figures gathered in 1929 is as follows, but no comparable data was gathered for earlier years:

| | |
|---|---|
| Stamped and enameled ware, total value | $174,879,957 |
| Stamped household ware (except vitreous-enameled), total | 26,547,089 |
| Galvanized-iron ware | 8,099,807 |
| Tinware (plain) | 7,568,109 |
| Japanned, lacquered, paint-enameled ware | 4,405,973 |
| Other metal ware | 6,473,200 |
| Stamped automotive parts, accessories | 30,041,640 |
| Other stamped ware | 40,072,581 |
| Enameled ware (vitreous), total | 32,302,045 |
| Kitchen, other household ware | 22,884,057 |
| Hospital ware | 850,612 |
| Other enameled ware | 8,567,376 |
| Perforated metals | 4,125,942 |
| Bottle caps | 29,923,420 |

That the value of bottle caps practically equals that of automotive stampings and far exceeds that of kitchenware and stamped household ware indicates the addiction of the American people to bottled beverages.

# Industrial Cities Well Organized for Relief; Hoover Asks $100,000,000

WASHINGTON—One of the most encouraging aspects of the present unemploymnt situation is the resourcefulness with which American communities are meeting their own needs, according to John B. Blanford, member of the President's emergency committee on employment.

"Unemployment centers to a large extent in the industrial cities, and it is those same cities which are so well equipped with trained personnel and appropriate organizations and agencies," he said. "In those cities there is a minimum of confusion and duplication of effort."

Mr. Blanford pointed out that labor, industry, private agencies and government are frequently represented in a central committee where they exchange ideas and learn what each is doing.

Announcement has been made here that an unemployment survey is to be undertaken by the Metropolitan Life Insurance Co., New York., at the request of Col. Arthur Woods, as a "sample" of the average situation.

"Following the suggestion of Colonel Woods," said Frederick H. Ecker, president of the company, "the survey is limited to about 40 widely distributed 'key' cities. The men will report on unemployment conditions in a specified number of homes at which they will regularly call Dec. 8."

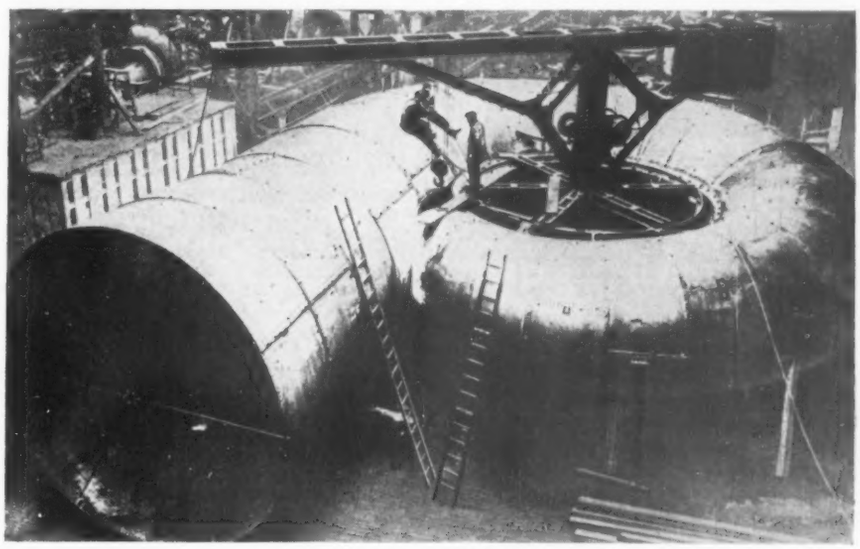
President Hoover in his message to congress Dec. 2 recommended an appropriation of $100,000,000 to $150,000,000 for additional federal building in the next six months to relieve unemployment. Senator Glenn, Republican, Illinois, immediately introduced a measure providing for $150,000,000 for emergency employment relief, accelerating public work, including highways.

## Wage Reductions Hurting Other Industries, Says Green

"Public enemies" is William Green's public slap at "employers who are taking advantage of economic industrial distress to lower living standards through forced reduction of wages."

The president of the American Federation of Labor in a statement to the press said he referred particularly to employers in the textile, bituminous coal and boot and shoe industries. He appeals to other industries:

"Because . . a decrease in purchasing power is inflicted upon those industries where employers and workers are heroically endeavoring to maintain wage standards. He calls on "patriotic American workers" to resist with all their power any attempt to reduce wages.



*International Newsreel Photo*

*NOT A GERMAN TUBA, BUT A TURBINE*

*German manufacturers claim this is the largest spiral turbine in the world, measuring more than 16 feet in diameter. The correspondent in Berlin, where the photograph was made, reports this as an example of the great strides which postwar Germany is making in manufacturing operations*

# Iron, Steel Foreign Trade 30 Per Cent Behind 1929

TEN-MONTH totals of foreign trade in iron and steel products show imports at 449,404 tons to be 29 per cent behind the comparable period of 1929. Exports also lag, the October figure of 131,850 tons making 10-month shipments 1,771,069, or 31 per cent under 1929.

The sharp downward trend displayed by exports during September failed to continue in October and that month revealed a small but significant gain of 639 tons. Increase in the September import trade was short lived, for the October figures show a decrease of 1941 tons. October's exports stand at 131,850 tons, its imports at 38,344 tons, by compilation of the iron and steel division, bureau of foreign and domestic commerce.

**IMPORTS AND EXPORTS**
**Gross Tons**

| | 1930 | | 1929 | |
|---|---|---|---|---|
| | Imports | Exports | Imports | Exports |
| Jan. | 42,314 | 225,090 | 54,793 | 274,296 |
| Feb. | 43,351 | 197,426 | 58,146 | 259,711 |
| Mar. | 55,604 | 238,333 | 52,747 | 270,925 |
| April | 52,650 | 208,640 | 54,337 | 277,580 |
| May | 52,814 | 196,120 | 74,272 | 261,516 |
| June | 48,955 | 159,392 | 63,635 | 247,811 |
| July | 39,700 | 131,772 | 71,378 | 270,532 |
| Aug. | 35,387 | 151,235 | 83,969 | 242,856 |
| Sept. | 40,285 | 131,211 | 60,974 | 222,408 |
| Oct. | 38,344 | 131,850 | 63,226 | 247,646 |
| Total (10 mos.) | 449,404 | 1,771,069 | 637,477 | 2,575,281 |
| Nov. | ..... | ..... | 54,041 | 241,829 |
| Dec. | ..... | ..... | 47,486 | 215,242 |
| Total | ..... | ..... | 739,004 | 3,032,352 |

**ORIGIN OF OCTOBER IMPORTS**
**Gross Tons**

| | Steel Ingots, Blooms | Steel Scrap | Cast Iron Pipe | Steel Bars |
|---|---|---|---|---|
| Austria | ..... | ..... | ..... | 7 |
| Belgium | 1,574 | ..... | 211 | 1,342 |
| Canada | 2 | 2,274 | 33 | ..... |
| Czecho-Slovak. | ..... | ..... | ..... | 11 |
| Denmark | 1 | ..... | ..... | ..... |
| France | 342 | ..... | 120 | 70 |
| Germany | 333 | ..... | ..... | 544 |
| Sweden | 11 | ..... | ..... | 379 |
| United Kingdom | 1 | 206 | ..... | 40 |
| Total | 2,264 | 4,336 | 364 | 2,393 |

By geographical divisions, ten-month totals show iron and steel commitments of North and Central America declining from 1929's 1,312,382 to 1930's 895,034 tons. Europe has taken 154,653 tons thus far in 1930; it took 316,720 tons in 10 months of 1929. The Far East's purchases have fallen from 604,882 tons in 1929 to 465,761 tons this year, and South America's decline is from 332,289 tons in 1929 to 247,424 in 1930.

Principal declines in articles exported for ten months of 1930 against the same time last year are: Scrap, from 445,017 to 331,602 tons; black steel sheets, from 153,885 to 107,132 tons; casing and oil-line pipe, from 102,336 to 55,407 tons. Imports' loss is shown partly in: Pig iron, from 117,889 to 103,949 tons; in welded pipe, from 33,734 to 17,286 tons; in hoops and bands, from 38,069 to 18,787 tons; and shapes and sheet piling, from 128,018 to 105,236 tons.

Exports of iron and steel products from the United States by countries of destination reveals the following ten-month figures: Canada took 1,080,319 tons in that period of 1929, against only 725,753 tons thus far in 1930; Mexican trade has declined from 58,192 tons to 38,012 tons; Italian trade is almost half at 43,664 from 1929's 99,270 tons for ten months; France's commitments have fallen from 16,941 tons to 5554; Ger-

**IMPORTS OF IRON AND STEEL PRODUCTS**
**Gross Tons**

| Item | Oct. 1930 | Sept. 1930 | Oct. 1929 |
|---|---|---|---|
| Pig iron | 13,552 | 10,330 | 14,295 |
| Sponge iron | 10 | 1 | |
| Ferroman. spiegel (1) | 2,247 | 2,265 | 6,634 |
| Ferrochrome (2) | ..... | ..... | 55 |
| Ferrosilicon (3) | 74 | 4 | 1,115 |
| Scrap | 4,336 | 2,233 | 11,062 |
| Ingots, blooms | 2,264 | 3,218 | 2,944 |
| Concrete bars | 541 | 3,666 | |
| Hollow bar, drill steel | 139 | 189 | 3,017 |
| Merchant steel bars | 1,713 | 2,440 | |
| Iron slabs | ..... | ..... | |
| Iron bars | 109 | 65 | 110 |
| Wire rods | 496 | 400 | 642 |
| Boiler, other plate | ..... | ..... | 77 |
| Sheets, skelp | 2,083 | 788 | 1,917 |
| Tin plate | 23 | 48 | 20 |
| Structural shapes | 4,881 | 6,537 | |
| Sheet piling | ..... | ..... | 9,378 |
| Rails, fastenings | 391 | 2,223 | 164 |
| Cast iron pipe and fittings | 364 | 373 | 3,427 |
| Welded pipe | 252 | 654 | |
| Other pipe | 822 | 640 | 3,150 |
| Barbed wire | 428 | 263 | 450 |
| Round wire | 158 | 225 | 400 |
| Flat wire, strip | 47 | 100 | 187 |
| Wire rope, strand | 196 | 122 | 281 |
| Other wire | 32 | 51 | 3 |
| Hoops and bands | 2,444 | 2,916 | 3,732 |
| Nails, tacks | 578 | 418 | 609 |
| Bolts, nuts, rivets | 13 | 33 | 34 |
| Castings, forgings | 110 | 77 | 116 |
| Total | 38,344 | 40,285 | 63,824 |

(1) Manganese content.
(2) Chromium content.
(3) Silicon content.

**DESTINATION OF OCTOBER IRON AND STEEL EXPORTS**
**Gross Tons**

| | Galvanized steel sheets | Tin terne plate | Black sheets | Steel bars |
|---|---|---|---|---|
| Argentina | 296 | 1,396 | 582 | 11 |
| Brazil | 127 | 95 | 8 | 67 |
| Canada | 632 | 3,995 | 12,111 | 2,403 |
| Cent. America | 114 | 4 | 37 | 105 |
| Chile | 15 | 703 | 1,558 | 59 |
| China | 45 | 492 | ..... | 135 |
| Columbia | 314 | 71 | 11 | 17 |
| Cuba | 324 | 565 | 16 | 106 |
| Dutch E. Ind. | 529 | 566 | 44 | 1 |
| Finland | 27 | ..... | ..... | ..... |
| France | ..... | ..... | 412 | 4 |
| Greece | 21 | 82 | ..... | ..... |
| Italy | ..... | ..... | 8 | ..... |
| Japan | 30 | 1,822 | 308 | 338 |
| Java | 50 | 285 | 2 | ..... |
| Mexico | 500 | 1,021 | 132 | 90 |
| Norway | 107 | ..... | ..... | ..... |
| Panama | 15 | ..... | 34 | 76 |
| Philippines | 2,312 | 59 | ..... | 52 |
| Peru | 14 | 725 | 4 | 51 |
| Russia | ..... | ..... | ..... | ..... |
| Turkey | ..... | ..... | ..... | ..... |
| United King. | 4 | ..... | 60 | 1,266 |
| Uruguay | 62 | 692 | 16 | 82 |
| Venezuela | 276 | 9 | ..... | 163 |
| Total | 6,123 | 14,029 | 15,494 | 5,263 |

**EXPORTS OF IRON AND STEEL PRODUCTS**
**Gross Tons**

| Item | Oct. 1930 | Sept. 1930 | Oct. 1929 |
|---|---|---|---|
| Pig iron, not including ferroalloys | 1,419 | 833 | 1,432 |
| Ferromang. and spiegeleisen | ..... | 234 | 33 |
| Scrap | 12,156 | 7,663 | 47,921 |
| Ingots, blooms | 579 | 256 | 1,733 |
| Iron bars | 92 | 171 | 225 |
| Steel bars | 5,263 | 3,739 | 13,077 |
| Alloy steel bars | 286 | 487 | 832 |
| Wire rods | 1,637 | 1,288 | 2,578 |
| Plates | 4,954 | 5,938 | 11,929 |
| Skelp | 20,061 | 12,959 | 16,971 |
| Iron sheets, galv.* | 473 | 428 | |
| Steel sheets, galv.* | 6,123 | 5,059 | 9,390 |
| Steel sheets, bl'k | 15,494 | 10,339 | 12,331 |
| Iron sheets, black | 908 | 998 | 1,363 |
| Hoops, bands, strip | 1,916 | 2,609 | 4,026 |
| Tin, terne plate | 14,029 | 22,135 | 23,389 |
| Shapes, not fabr. | 10,801 | 12,128 | 30,513 |
| Shapes, fabr. | 8,125 | 10,214 | 7,534 |
| Tanks, complete and knocked down† | 1,759 | 1,095 | |
| Metal lath | 343 | 1,224 | 409 |
| Steel rails | 1,546 | 6,526 | 8,297 |
| Rail fastenings | 1,032 | 1,236 | 2,531 |
| Boiler tubes | 837 | 1,158 | 1,630 |
| Casing, line pipe | 3,295 | 2,952 | 8,668 |
| Malleable screwed pipe fittings | 669 | 720 | 1,456 |
| Cast iron screwed pipe fittings | 489 | 463 | 3,181 |
| Cast iron pressure pipe, fit | 839 | 592 | 1,718 |
| Cast iron soil pipe and fittings | 920 | 1,099 | 4,120 |
| Black, gal. welded wrought pipe* | 703 | 714 | 12,616 |
| Black, gal. welded steel pipe* | 4,390 | 5,368 | ..... |
| Plain wire | 2,227 | 1,473 | 3,471 |
| Barbed wire, fencing | 2,901 | 3,566 | 5,673 |
| Woven wire screen cloth | 73 | 122 | 115 |
| Wire rope | 266 | 453 | 597 |
| Insulated wire and cable | 36 | 28 | 50 |
| Other wire | 669 | 445 | 620 |
| Wire nails | 733 | 870 | 721 |
| Nails, not wire | 412 | 377 | 525 |
| Tacks | 35 | 27 | 52 |
| Bolts, nuts, rivets | 645 | 659 | 1,267 |
| Iron castings | 228 | 339 | 528 |
| Steel castings | 498 | 558 | 871 |
| Car wheels, axles | 1,445 | 1,373 | 2,210 |
| Horseshoes | 24 | 2 | 89 |
| Forgings | 520 | 294 | 977 |
| Total | 131,850 | 131,211 | 247,669 |

*Combined prior to 1930.
†Included in a miscellaneous classification prior to 1930.

many's from 21,073 tons to 8141; Japan from 330,114 tons to 266,045; United Kingdom, from 56,556 to 38,754 tons.

**ORIGIN OF OCTOBER IMPORTS**

**Gross Tons**

| | Iron Ore | Pig Iron | Manganese | Ferromanganese |
|---|---|---|---|---|
| Algeria, Tunis | 8,000 | ..... | ..... | ..... |
| Australia | 12,993 | ..... | ..... | ..... |
| Belgium | ..... | ..... | ..... | ..... |
| Brazil | ..... | ..... | 5,380 | ..... |
| Brit. India | ..... | 9,256 | 3,120 | ..... |
| Canada | 39 | 74 | 1,916 | 1,560 |
| Chile | 132,875 | ..... | ..... | ..... |
| Germany | ..... | ..... | ..... | ..... |
| Gold Coast | ..... | ..... | 6,122 | ..... |
| Kwantung | ..... | 30 | ..... | ..... |
| Netherlands | ..... | 100 | ..... | ..... |
| Newfoundland | 9,585 | ..... | ..... | ..... |
| Norway | ..... | ..... | ..... | ..... |
| Russia | 8,999 | ..... | 1,466 | ..... |
| Spain | 6,700 | ..... | ..... | ..... |
| Sweden | 7,205 | 685 | ..... | ..... |
| United King. | ..... | 3,407 | ..... | 687 |
| Total | 186,396 | 13,552 | 18,302 | 2,247 |

**DESTINATION OF IRON AND STEEL EXPORTS**

**Gross Tons**

| Country | Oct., 1930 | Sept., 1930 | Oct., 1929 |
|---|---|---|---|
| North and Central Am. and W. Indies | 78,593 | 81,549 | 121,517 |
| Canada, Newfoundland | 65,312 | 67,426 | 97,309 |
| Cuba | 2,367 | 3,559 | 6,101 |
| Guatemala | 187 | 248 | 816 |
| Honduras | 436 | 394 | 683 |
| Mexico | 6,929 | 5,259 | 11,484 |
| Panama | 1,116 | 998 | 1,095 |
| Salvador | 223 | 101 | 708 |
| Brit. W. Indies | 791 | 798 | 1,114 |
| Other W. Indies | 925 | 1,919 | 1,209 |
| Other Cent. Am. | 307 | 847 | 998 |
| South America | 19,304 | 16,541 | 34,405 |
| Argentina | 6,519 | 4,990 | 8,378 |
| Brazil | 1,026 | 2,950 | 7,979 |
| Chile | 5,998 | 2,775 | 5,515 |
| Colombia | 1,035 | 1,095 | 3,409 |
| Peru | 995 | 1,423 | 1,982 |
| Uruguay | 1,052 | 1,251 | 2,445 |
| Venezuela | 2,430 | 1,652 | 4,197 |
| Other So. Am. | 249 | 405 | 500 |
| Europe | 9,952 | 5,969 | 19,356 |
| France | 500 | 281 | 1,118 |
| Germany | 3,510 | 189 | 2,977 |
| Italy | 89 | 543 | 3,453 |
| Poland, Danzig | ..... | ..... | 10 |
| Russia, Europe | 567 | 264 | 912 |
| Spain | 9 | 33 | 33 |
| Sweden | 282 | 95 | 3,119 |
| United Kingdom | 2,783 | 3,083 | 5,704 |
| Other Europe | 2,212 | 1,481 | 2,030 |
| Far East | 23,754 | 25,570 | 65,752 |
| British Malaya | 535 | 293 | 955 |
| China | 1,406 | 1,927 | 3,588 |
| Dutch E. Indies | 4,112 | 2,804 | 3,359 |
| India and Ceylon | 1,501 | 1,211 | 1,568 |
| Hong Kong | 1,031 | 381 | 775 |
| Japan | 9,395 | 11,127 | 43,100 |
| Kwantung | 74 | 2,573 | 294 |
| Philippine Isl'ds | 4,867 | 4,333 | 8,937 |
| Australia | 493 | 514 | 1,557 |
| New Zealand | 148 | 115 | 907 |
| Other Asia | 192 | 292 | 712 |
| Africa | 247 | 1,582 | 6,639 |
| Union S. Africa | 42 | 795 | 655 |
| Egypt | 126 | 180 | 5,724 |
| Mozambique | 9 | 406 | 128 |
| Other Africa | 70 | 201 | 132 |

Included in $6,298,000,000 spent by the railroads in the past eight years for capital outlay are 9206 new miles of trackage, 956,285 freight cars, 15,642 locomotives, and 21,259 passenger cars.

## Castings' Output Declines Over Past Eight Months

October's new orders for steel castings eased off further to 32 per cent of shop capacity as against 34 in September. Production during the month, as reported to the bureau of the census by the principal manufacturers, was likewise down two points to 41 per cent of capacity, when 59,506 tons were cast. Following monthly table shows 1930's ten-month totals lagging considerably:

| | Total bookings tons | Per cent of capacity | Total production tons | Per cent of capacity |
|---|---|---|---|---|
| 1929 | | | | |
| Oct. | 136,208 | 94 | 120,937 | 83 |
| (10 mos.) | 1,151,859 | 79 | 1,138,765 | 78 |
| Nov. | 97,888 | 67 | 110,297 | 76 |
| Dec. | 90,287 | 62 | 106,569 | 73 |
| (year) | 1,340,034 | 77 | 1,335,631 | 78 |
| 1930 | | | | |
| Jan. | 101,728 | 70 | 109,296 | 76 |
| Feb. | 104,727 | 80 | 107,897 | 75 |
| March | 122,658 | 85 | 113,737 | 79 |
| April | 93,200 | 65 | 110,903 | 77 |
| May | 91,307 | 63 | 105,242 | 73 |
| June | 61,358 | 43 | 90,985 | 63 |
| July | 58,069 | 40 | 79,181 | 55 |
| Aug. | 51,464 | 36 | 64,403 | 45 |
| Sept.* | 49,542 | 34 | 61,919 | 43 |
| Oct.** | 45,546 | 32 | 59,505 | 41 |
| (10 mos.) | 788,651 | 55 | 903,115 | 63 |

*Revised. **Preliminary.

## Coke Output Gain Slight

Activity at by-product coke plants did not show much improvement in October, total output being 3,431,529 net tons, a small gain over September. Beehive output at 177,800 net tons showed a gain of 5.8 per cent over September. Eighty-nine by-product plants operated and produced at about 65 per cent of capacity. Colorado Fuel & Iron Co., Denver, put into operation a new battery of 31 Koppers ovens in October. Cumulative production of coke for ten months of 1930 is below last year, as bureau of mines compilation shows:

(In net tons)

| | By-product coke | Beehive coke | Total coke |
|---|---|---|---|
| 1929 | | | |
| Oct. | 4,610,138 | 470,200 | 5,080,338 |
| (10 mos.) | 44,973,386 | 5,256,800 | 50,230,186 |
| 1930 | | | |
| Sept. | 3,401,417 | 168,100 | 3,569,517 |
| Oct. | 3,431,529 | 177,800 | 3,609,329 |
| (10 mos.) | 39,300,108 | 2,426,300 | 41,726,408 |

## Plate Orders Year's Low

New orders for fabricated steel plates in October were 24,002 tons, compared with 33,602 in September. Largest decline was shown in orders for oil storage tanks, with other losses recorded in material for tank cars and blast furnaces. Gas holders showed a gain from September's 487 tons to 1,385 tons. Reports by months are by the bureau of census from 48 firms:

| 1929 | Total | Oil storage tanks | Blast furnaces | Stacks & miscellaneous |
|---|---|---|---|---|
| Oct. | 32,099 | 8,786 | 853 | 15,766 |
| (10 mos.) | 447,235 | 126,148 | 9,579 | 193,014 |
| Nov. | 42,295 | 9,033 | 1,019 | 14,601 |
| Dec. | 23,535 | 3,669 | 1,529 | 13,166 |
| (Year) | 513,065 | 138,350 | 12,127 | 220,781 |
| 1930 | | | | |
| Jan. | 50,076 | 7,432 | 1,042 | 15,168 |
| Feb. | 28,332 | 7,865 | 279 | 11,656 |
| March | 38,051 | 6,593 | 2,749 | 17,675 |
| April | 39,437 | 8,460 | 273 | 17,698 |
| May | 30,306 | 9,222 | 426 | 13,228 |
| June | 35,307 | 8,841 | 511 | 16,944 |
| July | 31,440 | 10,350 | 102 | 13,165 |
| Aug. | 29,235 | 9,388 | 750 | 15,695 |
| Sept. | 33,602 | 14,106 | 514 | 12,084 |
| Oct. | 24,002 | 4,400 | 231 | 13,170 |
| (10 mos.) | 339,848 | 87,157 | 6,877 | 147,483 |

## Gray Iron Members Hold to September's Gain

After September proved to be the first month in six in which the percentage of production increased, reports of foundry members to the Gray Iron institute, Cleveland, show October production was maintained at almost the same level.

Foundries, numbering 161, reported October production at 65.6 per cent of normal, which is the average monthly output during the past three years. This compares with September's 65.7 mark.

New business ratio showed October at 47.4 per cent; September, 49. October unfilled orders at 25.9 are compared with September's rate of 37.3.

## Sales of Stokers in Loss

October sales of mechanical stokers as reported by the 11 leading manufacturers totaled 92 stokers of 38,276 horsepower, compared with 128 of 42,899 horsepower in September. October total was the lowest since March, according to the department of commerce in the following table:

| 1929 | Stokers sold | Fire tube boilers | Water tube boilers |
|---|---|---|---|
| October | 178 | 89 | 89 |
| (10 mos.) | 1,530 | 633 | 897 |
| November | 107 | 43 | 64 |
| December | 79 | 30 | 49 |
| (Year) | 1,716 | 706 | 1,010 |
| 1930 | | | |
| January | 53 | 24 | 29 |
| February | 73 | 26 | 47 |
| March | 89 | 45 | 44 |
| April | 108 | 46 | 62 |
| May | 96 | 41 | 55 |
| June | 151 | 70 | 81 |
| July | 150 | 83 | 67 |
| August | 115 | 61 | 54 |
| October | 92 | 46 | 46 |
| (10 mos.) | 1,055 | 513 | 542 |

# November Iron Output Makes Another Sharp Drop

MAKING another precipitous drop in November, production of coke pig iron slumped to the lowest average daily level since August, 1924, and while four more blast furnaces were added to the inactive list, the total remained the smallest since October, 1921. Reflecting the blowing out of 15 furnaces in October, the November loss in production was somewhat more severe than the shrinkage of the previous month.

For seven consecutive months, production has headed downward. During this period average daily production has gone from 106,371 gross tons a day in April to 62,180 tons a day in the month just closed. Operating blast furnaces have shrunk from 184 in March to 107 on Nov. 30, a loss of 77 stacks. The fact that the November loss was only four stacks, as compared with 15 in October, 11 in September, 7 in August, and 18 each in July and June, lends some encouragement for the future.

Statistics compiled largely by telegraph reveal that the November daily rate of 62,180 tons was a loss of 7671 tons, or 11 per cent, from the 69,851 tons of October. October had registered a loss of 6042 tons, or 8.2 per cent, from September. The rate for November one year ago was 106,081 tons. In August, 1924, the previous month in which production was lower, the daily rate was 60,741 tons.

During 11 months of this year, daily production has averaged 89,149 tons, against 115,808 tons in all of 1929 and 103,365 tons in all of 1928.

The November total production of iron was 1,865,415 gross tons, a figure which was 299,959 tons, or 13.8 per cent, below the October level of 2,165,374 tons. November, however, was a 30-day month and October a 31-day month. In November, 1929, the production was 3,182,420 tons.

**AVERAGE DAILY PRODUCTION**

| | 1930 | 1929 | 1928 | 1927 |
|---|---|---|---|---|
| Jan. | 91,573 | 110,742 | 92,113 | 100,043 |
| Feb. | 101,640 | 114,942 | 99,954 | 105,021 |
| Mar. | 104,930 | 119,662 | 103,199 | 112,326 |
| Apr. | 106,371 | 122,106 | 106,066 | 114,146 |
| May | 104,564 | 125,753 | 106,219 | 109,388 |
| June | 97,817 | 123,887 | 102,745 | 102,991 |
| July | 85,110 | 122,016 | 99,120 | 95,311 |
| Aug. | 81,455 | 120,845 | 101,193 | 95,183 |
| Sept. | 75,893 | 116,548 | 102,120 | 92,750 |
| Oct. | 69,851 | 115,747 | 108,824 | 90,710 |
| Nov. | 62,180 | 106,081 | 110,155 | 88,728 |
| Dec. | ..... | 91,513 | 108,702 | 87,039 |
| Ave. | 89,149 | 115,808 | 103,365 | 99,422 |

For the 11 months this year, output has aggregated only 29,775,730 gross tons, against 39,453,266 tons for the corresponding period of 1929 and 34,461,857 tons for 1928.

Relating production to potential capacity, operations in November were 44.1 per cent, as compared with 49.6 per cent in the previous month and 75.8 per cent in November, 1929.

Operating blast furnaces on Nov. 30 totaled 107, against 111 on Oct. 30. This total was still the lowest since October, 1921, when 95 were making iron. During November, 2 merchant furnaces were blown in and none blown out; of the nonmerchant or steelworks class, 4 were blown in and 10 were blown out or banked.

**RATE OF OPERATION**

(Relation of Production to Cacapity)

| | 1930† | 1929* | 1928‡ |
|---|---|---|---|
| January | 65.0 | 79.0 | 66.8 |
| February | 72.1 | 82.2 | 72.5 |
| March | 74.5 | 85.5 | 74.8 |
| April | 75.4 | 87.4 | 76.8 |
| May | 74.2 | 89.8 | 77.0 |
| June | 69.3 | 88.5 | 74.4 |
| July | 60.3 | 87.2 | 71.8 |
| August | 57.8 | 86.4 | 73.3 |
| September | 53.8 | 83.3 | 74.1 |
| October | 49.6 | 82.6 | 78.9 |
| November | 44.1 | 75.8 | 79.8 |
| December | ..... | 65.5 | 78.8 |

†Based on capacity of 51,490,790 tons Dec. 31, 1929; *on capacity of 51,069,895 tons; ‡on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

**NOVEMBER PIG IRON PRODUCTION**

| | No. in blast Last day of month Nov. | Oct. | Total tonnage made Merchant | Nonmerchant |
|---|---|---|---|---|
| Ohio | 20 | 22 | 58,725 | 299,330 |
| Pennsylvania | 36 | 38 | 62,298 | 539,955 |
| Alabama | 10 | 10 | 100,858 | 41,328 |
| Illinois | 11 | 11 | 67,687 | 137,634 |
| New York | 6 | 6 | 50,057 | 56,626 |
| Colorado | 3 | 2 | | |
| Indiana | 8 | 8 | | |
| Maryland | 2 | 3 | 6,067 | 274,039 |
| Virginia | 2 | 2 | | |
| Wisconsin | 0 | 0 | | |
| Kentucky | 0 | 0 | | |
| Massachusetts | 1 | 1 | | |
| Tennessee | 0 | 0 | 12,264 | 77,585 |
| Utah | 1 | 1 | | |
| West Virginia | 3 | 3 | | |
| Michigan | 3 | 3 | | |
| Minnesota | 1 | 1 | 14,355 | 44,026 |
| Missouri | 0 | 0 | | |
| New Jersey | 0 | 0 | | |
| Spiegel and ferro —all states | | | 6,881 | 15,700 |
| Total | 107 | 111 | 379,192 | 1,486,223 |

Stacks blown in during November were: In Pennsylvania: Shenango No. 3, Shenango Furnace Co.; Neville Island, Davison Coke & Iron Co.; one Eliza; Jones & Laughlin Steel Corp. In Indiana: Gary Nos. 2 and 12, Illinois Steel Co. In Colorado: One Minnequa, Colorado Fuel & Iron Co.

Furnaces blown out were: In Ohio: Hazelton No. 3, Republic Steel Corp.; Lorain No. 2, National Tube Co. In Pennsylvania: One Eliza and one Aliquippa, Jones & Laughlin Steel Corp.; one Monessen, Pittsburgh Steel Co.; Bethlehem A, and Cambria L, Bethlehem Steel Co. In Maryland: Maryland A, Bethlehem Steel Co. In Indiana: Gary Nos. 7 and 12, Illinois Steel Co.

## Steel Output of Canada Up, Though Iron Declines

Toronto, Ont.—Production of pig iron in Canada during October totaled 40,079 gross tons, compared with 48,395 tons for September, or a decline of 17 per cent. The decrease was mostly in basic iron, which dropped from 35,044 tons to 25,922 tons, and malleable which declined from 11,390 tons to 2219 tons. Foundry iron advanced from 1991 tons to 10,938 tons.

For the first ten months production of pig iron was 661,795 tons, compared with 921,096 tons for the corresponding months of 1929.

Steel ingots and castings produced in October amounted to 65,431 tons, which exceeded by 17 per cent the year's low record of 55,808 tons in September, and marked the first upturn in 1930 since March. Increases were in basic open-hearth ingots, which advanced from 51,050 tons in September to 58,454 tons, and electric ingots which rose from 1545 tons to 4347 tons.

For ten months production of steel ingots and castings totals 876,282 tons, against 1,203,625 tons for the corresponding months of last year, and includes 826,594 tons of ingots and 49,688 tons of castings.

**MONTHLY PRODUCTION**

| | 1930 | 1929 | 1928 |
|---|---|---|---|
| Jan. | 2,838,751 | 3,433,028 | 2,855,515 |
| Feb. | 2,845,937 | 3,218,376 | 2,898,668 |
| Mar. | 3,252,822 | 3,709,518 | 3,199,175 |
| April | 3,191,119 | 3,663,167 | 3,181,975 |
| May | 3,241,477 | 3,898,344 | 3,292,790 |
| June | 2,934,508 | 3,715,104 | 3,082,340 |
| July | 2,638,441 | 3,782,511 | 3,072,711 |
| Aug. | 2,525,105 | 3,746,198 | 3,136,995 |
| Sept. | 2,276,781 | 3,496,454 | 3,063,593 |
| Oct. | 2,165,374 | 3,588,146 | 3,373,539 |
| Nov. | 1,865,415 | 3,182,420 | 3,304,656 |
| Total 11 mos. | 29,775,730 | 39,453,266 | 34,461,857 |
| Dec. | ..... | 2,836,917 | 3,369,784 |
| Total | ..... | 42,270,183 | 37,831,741 |

# Industrial Men in the Day's News

## John Howe Hall, Technical Assistant to President, Taylor-Wharton Iron & Steel Co.

EMULATING his uncle, Dr. Henry Marion Howe, he has risen high in steel metallurgy, having devoted more than 25 years to that study.

ENTERING Bethlehem Steel's open-hearth department in 1904, he since has been employed by Buffalo Crucible Castings, Taylor-Wharton Iron & Steel, and Quigley Furnace & Foundry companies.

SINCE 1915 he has been metallurgist for Taylor-Wharton, and in 1924 received the J. H. Whiting gold medal of American Foundrymen's association.

STEEL claimed the interest of John Howe Hall prior to his leaving college, and in steel he has found his life study. He has just been appointed technical assistant to G. R. Hanks, president, Taylor-Wharton Iron & Steel Co., High Bridge, N. J., as noted in STEEL of Nov. 20.

His duties cover full supervision of all research activities, a general check on manufacturing methods, co-operation with plant superintendents, and sales assistance through his technical articles, technical talks and committee work with representative engineering societies, as well as liaison work with customers, competitors, etc. Since 1915 Mr. Hall has been metallurgist and metallurgical engineer for Taylor-Wharton at High Bridge and Easton, Pa.

Mr. Hall, a nephew of Dr. Henry Marion Howe, dean of American steel metallurgists, was born in June, 1881, at South Portsmouth, R. I. He received his early education in New Jersey and entered Harvard university, being graduated in 1902 with a B. A. degree. After another year of study he was awarded his master's degree, and then under Prof. Albert Sauveur did specialized graduate research work on vanadium steels.

In 1904 he became identified with Bethlehem Steel Co., Bethlehem, Pa., in the open-hearth department, puddle mill, laboratory and crucible melting department. After becoming assistant superintendent of the crucible steel department he left Bethlehem in 1906 to become melter for a short time for Buffalo Crucible Castings Co., Buffalo, and later he was appointed metallographist for Taylor-Wharton Iron & Steel Co. In 1911 that company placed him in charge of steelmaking and heat treatment.

During 1913 and a part of 1914 he conducted a consulting engineering practice in New York, which was followed by a brief employment as engineer of tests for Quigley Furnace & Foundry Co., Springfield, Mass., doing research work in semisteel. In 1915, Taylor-Wharton recalled him to be its metallurgist. His work has included the development of a heat-treated steel containing slightly more than 1 per cent manganese, the melting of ferromanganese in a cupola instead of a crucible for making manganese steel, the manufacture of manganese steel in the electric furnace, and the investigation of proper heat treatments for and characteristic physical properties of carbon and alloy cast steels.

In 1924 he was awarded the J. H. Whiting gold metal of the American Foundrymen's association, and in 1928 he presented that organization's exchange paper before the Institute of British Foundrymen.

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HENRY A. ROEMER, president, Continental Steel Corp., Kokomo, Ind., since its inception in 1927, has resigned to become president of the Sharon Steel Hoop Co., Sharon, Pa., and Youngstown, O. Effective Jan. 1, he succeeds Severn P. Ker, whose resignation after 21 years in that office was noted in Steel of Nov. 27 Mr. Ker becomes chairman of the company.

As noted in a complete biographical sketch in IRON TRADE REVIEW of Sept. 1, 1927, Mr. Roemer has been in the iron and steel business since he was 14. Born in Struthers, O., in 1884, he left school in 1898 to work at the Anna blast furnace of the Struthers Furnace Co. He next obtained employment at the mill of the American Sheet Steel Co., Struthers, which later became a unit of the United States Steel Corp. He rose to be plant superintendent, and in 1907 became affiliated with Youngstown Sheet & Tube Co., Youngstown, rising to be night superintendent at its Campbell works.

Six years later, in 1913, he was made superintendent of Canton Sheet Steel Co., Canton, O., and when it was purchased by Hydraulic Pressed Steel Co., Cleveland, he was assistant general manager. He next became vice president and general manager of Superior Sheet Steel Co., Canton, O., which rolled its first sheets in August, 1920, and later was elected president. When in 1927

it merged with Chapman-Price Steel Co., Indianapolis, and Kokomo Steel & Wire Co., Kokomo, to form the Continental Steel Corp., he was chosen president.

It is believed that D. A. Williams, now first vice president and plant manager, Continental Steel Corp., will be elected president to succeed Mr. Roemer.

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Harold L. C. Ashey, former vice president of Rockwood Sprinkler Co., Worcester, Mass., has been elected president of the Hobbs Mfg. Co., Worcester.

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John H. Miller has resigned from the engineering department of General Steel Castings Co., Eddystone, Pa. For several years Mr. Miller was associated with the American Steel Foundries, Alliance, O., as special

**Henry A. Roemer**

apprentice and later in the engineering department. He left in December, 1928, to go with Electric Furnace Co., Salem, O. Seven months later he resigned that position to become associated with the General Steel Castings Co.

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H. J. Birney, superintendent of Mystic Iron Works, Everett, Mass., has resigned and will be succeeded by H. J. Allen, formerly blast furnace superintendent for Bourne-Fuller Co., Cleveland, now a unit of Republic Steel Corp., Youngstown, O.

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Alfred T. Duffield has been named assistant treasurer of the United States Steel Corp., New York, to succeed the late Francis J. Jester. For many years Mr. Duffield has been secretary to W. J. Filbert, comptroller. He has been with the corporation for 34 years, starting as an office boy.

Alan T. Oysten has been appointed second assistant treasurer. Mr. Oysten has been with the United States Steel Corp. for 11 years, and like Mr. Duffield began as an office boy.

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R. D. Dickson has been elected president of Kewanee Boiler Corp., Kewanee, Ill. Other officers elected are: Chairman of the board, B. F. Baker; secretary, E. F. Wagner; and treasurer, Arthur Cook.

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Brinton Welser, secretary, Chain Belt Co., Milwaukee, has been elected vice president and director. He has been connected with the Chain Belt Co. since 1913 and will continue his activities in engineering and sales work.

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Thomas B. Whitted, assistant to the vice president of C. H. Wheeler Mfg. Co., Philadelphia, has been placed in charge of its New York office, effective Jan. 1.

Morris B. Carroll recently became affiliated with the New York office of the Wheeler company.

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Thomas Bradshaw has resigned as president and general manager of Massey-Harris Co. Ltd., Toronto, Ont., agricultural implement manufacturer, and the duties of that office will be undertaken by T. A. Russell, vice president, until a successor is named.

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Howard Thomas has resigned as general superintendent of mines, Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., after a 17-year connection. He has been succeeded by Ben Davis, formerly superintendent of mines for Edgewater-Kingston Coal Co., of West Virginia.

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Stephen L. Carroll, for the past six years superintendent of foundries, Calumet Foundry & Machine Co., East Chicago, Ind., has become associated with the alloy division of the Ohio Steel Foundry Co., Springfield, O. Prior to his connection with the Calumet company he was foundry superintendent for George B. Limbert & Co., East Chicago, Ind.

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C. E. Brodhead, for more than 25 years prominent in the bolt and nut industry, became affiliated Nov. 1 with the bolt and nut department of the Bethlehem Steel Co., Bethlehem, Pa. Practically his entire career was with Scranton Bolt & Nut Co., Scranton, Pa., the closing ten years as vice president. When Scranton Bolt & Nut Co. was merged into Wrought Iron Co. of America, Mr. Brodhead was appointed New York and New England manager, with a sales office in New York.

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Wilbur V. Eaton, who has been associated officially with the Newton Steel Co., Youngstown, O., for over ten years, first as assistant treasurer and for several years as secretary, resigned Dec. 1. While Mr. Eaton has plans for the future, he has not made them public as yet.

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H. J. Freyn, president, Freyn Engineering Co., Chicago, has returned from a trip to England and Soviet Russia taken in connection with that company's execution of its contracts for blast furnace and steel plant engineering services.

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I. W. Solomon, Pittsburgh, was elected president of the Pittsburgh chapter of the Institute of Scrap Iron and Steel Inc., at the annual meeting. Other officers elected include the following: H. N. Trimble, Pittsburgh, vice president; A. Cohen, of Fort Pitt Tool & Supply Co., Pittsburgh, secretary; Fred W. Wimmer, the Hausman & Wimmer Co., Pittsburgh, treasurer; I. Wilkoff, Wilkoff Co.,

**E. K. Klingelhofer**

Who, as noted in STEEL of Oct. 2, was elected president, Pittsburgh Bridge & Iron Works, Pittsburgh, to succeed his father, the late George E. Klingelhofer.

Youngstown, O., chairman of executive committee.

The executive committee, in addition to the above, will consist of Jay G. Stephens, Jay G. Stephens Corp., Pittsburgh; D. L. Wilkoff, United Iron & Metal Co., Pittsburgh; Joe Jacobson, Luria Bros. & Co., Pittsburgh; Harry Cohn, A. H. Cohn & Sons, Butler, Pa.; and Mark Kuhn, Charles Dreifus & Co., Pittsburgh.

## May Revoke Dumping Order

Washington — Secretary of the Treasury Mellon has had placed before him for signature an order revoking the dumping order against pig iron from Canada. While the order has not yet been finally acted upon, it is believed that it will be signed.

# Obituaries

ISAAC W. FRANK, 75, for many years identified with the steel industry in the Pittsburgh district and chairman of the board of the United Engineering & Foundry Co., Pittsburgh, died in that city Dec. 1. He had been ill for six months.

Mr. Frank was born in Pittsburgh and was graduated from Rensselaer Polytechnic institute, Troy, N. Y., with a degree in civil engineering in 1876. He entered the employ of the Keystone Bridge Co., Pittsburgh, later engaging in mining work in Colorado. Shortly after his return to Pittsburgh he turned his attention to the manufacture of rolls and steel mill machinery. He helped organize the Frank-Kneeland Machine Co. in 1892, the forerunner of the present United Engineering & Foundry Co., a consolidation of leading manufacturers of rolls and rolling mill machinery.

Mr. Frank was president of the United company until 1919 when he resigned and became chairman of the board. Mr. Frank was a director of a number of banks and industrial organizations, including the National Steel Corp., Apollo Steel Co., Copperweld Steel Co., the Great Lakes Engineering Works, and Weirton Steel Co. He gained wide renown for his philanthropic work in Pittsburgh.

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Harry L. Hoag, 63, connected with American Steel & Wire Co., Cleveland, for many years latterly with its auditing department, died Nov. 28.

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Charles R. Heddon, 77, president and founder of C. R. Heddon Construction Co., builder of the Metropolitan Tower and other large buildings in New York, died Nov. 30 at Newark, N. J. He was a graduate of Stevens institute.

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W. R. Balsinger, 64, assistant to the president of Carnegie Steel Co., Pittsburgh, died Nov. 27 at Pittsburgh. Mr. Balsinger was identified with the Carnegie Steel Co. for more than 50 years, entering its employ in the Edgar Thomson works in 1879. He was later made clerk and transferred to the Homestead works, where he became ordnance engineer in charge of government work. He was appointed assistant to the president several years ago.

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Carl M. Kitselman, 65, associated with Kitselman Bros. Co., Muncie, Ind., makers of wire fencing, and also with Muncie Oil & Engine Co., died recently. His brother's death was noted in STEEL of Nov. 20.

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William C. Cushing, 46, for more than 25 years identified with Pickands, Mather & Co., Cleveland, died Nov. 27 following an automobile accident. For about a year before his death he was assistant superintendent of docks, and prior to that was head of accounting in the dock department.

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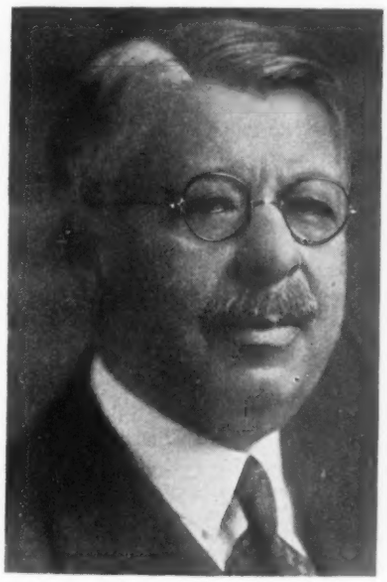
A. B. Neumann, 60, member of the engineering staff, Freyn Engineering Co., Chicago, died Nov. 27 at Dusseldorf, Germany. He was born in Norway but had made his home in Chicago since 1898. Since July he was a member of the Freyn company's staff at Moscow, aiding in the design and construction of the steelworks at Kuznetsk, Siberia. He was known internationally as an engineer and designer of steel plants, and during the past 30 years designed mills for Illinois Steel, American Rolling Mill, Steel & Tube Co. of America and other companies and recently assisted in rebuilding steel mills at Manchester, England.



Isaac W. Frank

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James G. Dornbirer, 63, founder in 1897 of Cleveland Planer Co., Cleveland, then Cleveland Planer Works, died Nov. 27 at Cleveland after a 2-year illness. Mr. Dornbirer was the designer and developer of the Cleveland open-side planer, and after settling in Cleveland 35 years ago organized his company to build them. He retired 12 years ago and later became honorary president of Dornbirer Machine Tool Co., Cleveland. He was a member of the Cleveland Engineering society, American Society of Mechanical Engineers, Cleveland chamber of commerce, and Rose Tech and Cleveland Athletic clubs.

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Fred M. Hoover, 62, former president, Hoover-Kinnear Construction Co., Columbus, O., and who retired 12 years ago, died Nov. 30.

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Charles T. Leffler, president of Leffler Machinery & Die Co. Inc., Brooklyn, N. Y., died recently. He had been active in the machinery business for 50 years.

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David E. Miles, 61, general manager of No. 3 plant, Moline Iron Works, Moline, Ill., died recently. Mr. Miles had been foundry foreman for Union Malleable Iron Co., East Moline, Ill., for about 31 years, and for the last ten years had been connected with the Moline Iron Works.

# Here and There in Industry

AMERICAN LOCOMOTIVE CO., New York, has formed a subsidiary to design and construct process plants for oil refining. The company will be known as Alco Products Inc. and will acquire Heat Transfer Products Inc., New York, formed by the parent company two years ago. It will use the American Locomotive Co.'s plant at Dunkirk, N. Y., which has produced oil refining equipment. William H. Woodin will be chairman on the executive committee; William C. Dickerman, chairman of the board; Joseph Davis, president; H. R. Swanson and D. T. Jacocks, vice presidents; F. P. Brent, comptroller; J. O. Hobby Jr., treasurer; and J. D. Finn, secretary.

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Stanley Works, New Britain, Conn., has purchased the building at 100 Lafayette street, New York, where its New York office and warehouse stocks are located.

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Gurney Refrigerator Co., Fond du Lac, Wis., maker of ice-cooled refrigerators, and among the earliest to build steel ice boxes, and later cabinets for mechanical refrigeration units, has announced its entry into the electric refrigerator field. It has acquired exclusive rights on a freezing unit powered with a 1/6-horsepower motor attached to a rotary type compressor. Extensive investments in presses and dies are being made and the enameling ovens are being rebuilt to use a new synthetic porcelain finish.

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Advance Machine Works, Madison, Wis., has been organized by Madison and Chicago capital and is establishing a plant at 319-321 East Wilson street, Madison, to manufacture a

(*Concluded on Page 67*)

*Fairchild Aerial Surveys*

# BEAMS FROM BROADWAY

*NEW YORK*

NEW YORK and the metropolitan district take at least 20 per cent of the structural steel tonnage of the country under normal conditions, it is conservatively estimated. During the year now closing this area probably did better than that.

New York Structural Steel Board of Trade figures indicate that lettings will run more than 100,000 tons under last year, but these figures do not include engineering work, subways, or bridges.

It is generally admitted that such work, especially in northern New Jersey, compares favorably with other years and somewhat heavier than the average. While New York tonnage has been running below last year, the reduction has been less than that in the country at large.

Bearing out the assumption that engineering work throughout the country has been running heavy are total awards of concrete reinforcing bars compiled by STEEL. While orders for shapes, admittedly one of the most active steel products, have dropped nearly 300,000 tons below last year, concrete bars lettings are actually heavier by more than 50,000 tons.

## Subways Take 100,000 Tons

Subways in New York brought out 105,000 tons of structural steel this year. All but about 20,000 tons will be placed before Jan. 1. The carryover of unplaced tonnage may be less, although the last two sections close Dec. 23. Steel required for subway work was somewhat less than the previous year. This tonnage is exclusive of station work and miscellaneous requirements.

Subway lettings have been rather unevenly spread. There was a spurt in the early spring and another in the final quarter of the year. The board of transportation in New York, however, with one of the city's most efficient engineering departments, has made real efforts to meet the emergency and has rushed blue prints.

Comment was recently made that subway needs might in a few years have passed the peak, but subway and tunnel work in New York has hardly begun, according to city planners. When Manhattan is completely "tunnelled" there still will remain Queens, the Bronx, Brooklyn and Staten Island, with a tunnel and rapid transit system for the latter.

## Steel an Inside Decoration

Most extensive use of chromium-nickel alloy steel for interior decorative work yet attempted will be in the new Earl Carroll theater, New York.

Combined with black velvet, Allegheny metal in vertical strips will frame and conceal colored lighting tubes, color to be introduced only by means of lighting. There will be six of these decorative units on each side of the auditorium.

The ceiling will include 13 decorative channels of chromium-nickel alloy, each containing the hidden Neon tubes, running forward from the rear of the auditorium and curving down to the proscenium arch.

In the basement foyer leading to the bar there will be a semicircular niche of the alloy, fluted, again with hidden lighting tubes.

Other features of this foyer are two large decorative columns of the metal, 14 feet high. The main lounge on the mezzanine floor will have four mirrors, 20 feet high by 12 feet broad, separated by columns of the same height and four feet in diameter, of the alloy.

Beams of the same metal will ornament the ceiling of the lounge. The balcony soffit offers another interesting use of the metal. Here 14 etched strips of the alloy, a foot wide, are arranged in a modified fan design, the strips again hiding lighting tubes.

All the 16 doors of the auditorium and lounges are of the same metal, in striking modern designs. The metal motif will be carried even to the sign on the front of the theater. The name "Earl Carroll" is to be in letters of the alloy, 4 feet 6 inches high, with channels for lighting tubes, against a background of ivory brick.

The fire escapes are specially designed as a part of the exterior decorative scheme.

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The building code, still under revision in New York, promises to have far-reaching influence on the use of steel. Already wind stress allowance has been increased. This allows reduction in total weight, estimated from 8 to 12 per cent. On the other hand, it is expected to increase the use of steel sections for certain types of building.

## Battleship Deck on Trial

Use of welded battleship deck steel flooring in several cases is held in abeyance pending the report of the committee, expected soon. Several projects have been estimated which call for the employment of steel plate flooring.

The United States bureau of standards is testing welded steel flooring both as to fire resistance and strength.

Test floors will be 18 feet long and 13½ feet wide with beams running the entire length.

In testing for strength, pig iron was piled on the floor until it buckled. The tests thus far have been most severe and will continue so.

Metal lath, windows, partitions and practically all building metals will be covered in the New York code. Old out-of-date building codes retard the use of steel in many sections. At White Plains recently a project called for an all-steel apartment, beams, floor and partitions. The building code prohibits such a building—only 45 minutes from Broadway.

## Quarter Mile Above Street

Structural steel work on the 200-foot dirigible mooring mast above the 86th story of the Empire State building is complete. The spire is now being enclosed with aluminum and chromium-nickel steel. It is one-quarter of a mile above Fifth avenue at Thirty-fourth street, New York.

This mast will take a maximum side pull of 50 tons, and, in addition, is wind-braced for a gale of 120 miles an hour. The spindle through the top of the mast will work on a ball and socket joint principle, allowing elasticity in all directions.

Provision is also made for a shuttle elevator to carry passengers to a glass-enclosed observation gallery at the top of the mast from the main observatory on the 86th floor. This upper gallery will be the equivalent in height to a 17-story building above the 86th floor.

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The aluminum and chromium-nickel alloy steel combination on the tower will be considerably more lustrous than the sides of the giant structure and will be illuminated at night.

Builders, Starrett Bros. & Eken Inc., are two months ahead of schedule on the general contract. Post & McCord erected the steel, the structural sections being fabricated by American Bridge Co., although McClintic-Marshall Co. also did much of the fabrication.

Including structural steel, alloy steel sides, spandrels, metal windows, reinforcing mesh, cables, piping, elevators, etc., it is estimated at least between 85,000 and 90,000 tons went into the building.

The first rivets driven in the first structural columns in the Majestic apartments on the site of the old Hotel Majestic, Central Park West and Seventy-second street, New York, were made from metal taken from the frame of the old hotel which was erected in 1893.

It was one of New York's first steel frame structures. Incidentally, it was built about the same time Irwin S. and Henry I. Chanin, builders of the new Majestic, were born.

The Majestic apartments will be 29 stories on a ground area of 42,500 square feet, taking about 700 tons of structural steel fabricated and erected by Hay Foundry & Iron Works. Extensive use of metal in the interior is also planned.

The Chanins' next project will be a 30-story studio apartment on the site of the old Century theater at Central Park West, the block being bounded by Broadway, Sixty-second and Sixty-third streets. This is the site where the French government, through the Palais de France Corp., had considered the building of a 65-story tower.

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New York's skyline is ever changing. Sailing up the harbor after two years' absence, a resident would be amazed at the new loft of peaks on lower Manhattan.

Just a few of the buildings completed, at least as to steel erection, and, in most instances entirely finished, are: Bank of Manhattan, Irving Trust Co., Farmers' Bank & City Trust Co., 120 Wall street, Downtown Athletic Club, Marex and half a dozen others.

Uptown are the Empire State, Chrysler, Lincoln, 500 Fifth avenue, the Nelson Towers and many others.

But a short time ago the transatlantic traveler noted two outstanding towers coming toward the Battery, the Woolworth and Singer buildings. Now they are picked out of the mass of brick and stone-covered steel with difficulty.

In another year three more peaks on the east side of lower Manhattan will have been completed, led by the 65-story Doherty building. Even all lower Manhattan may be topped by a projected 105-story pile considered by the Adler interests at Wall and Pearl streets.

And in the midtown district the Rockefeller Radio City will include several great towers.

## Construction Safer Trade

In the early days of skyscraper construction a man killed for every story was not uncommon.

When Fred T. Ley & Co. erected the 77-story Chrysler building, one man was lost. The Ley company has been awarded one of three prizes for safety records among large employers, with more than 144,000 man hours during a three months' period. Otis Elevator Co. also won a prize.

An important factor in accident prevention in building construction has been in making material hoists all but foolproof. Robert C. Post, of Post & McCord, steel erectors, recently developed an improved hoist which automatically halts a falling load independent of the action of the operator.

Most hoists are enclosed on three danger sides with heavy wire mesh with bars across the openings and runways in front of the hoists. Catch scaffolds on the upper stories, sidewalk sheds, protected elevator shafts and interior hoists are other factors.

But one of the most vital needs is careful planning for the job and education of employes in accident prevention. Reports of wholesale slaughter of workmen on the world's largest building, the Empire State, were without foundation. The safety record on this structure was one of the best.

## Speed Public Projects

State and city projects, slow to reach the steel letting stage as a rule, are being speeded up. Some of the New York state contracts being let especially call for early work. Ability to start is one of the requirements of the general contract. This means earlier action on the steel required.

There is delay, however, in the placing of grade elimination contracts. The public service commission has ordered the elimination of 842 grade crossings throughout the state over a period of years.

Up to the passage of the Dunmore act, which was effective May 1, contracts were being let at the rate of eight a month. Now the average is less than three and a half a month.

The Dunmore act provides that the prevailing rate of wage and the eight-hour day be applied to all grade crossing work. Several railroads are testing the constitutionality of the law, with the result much work is held up.

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## Fulton Iron Litigation Temporarily Halted

St. Louis—Attorneys for the Fulton Iron Works Co. have obtained a temporary writ of prohibition in the Missouri supreme court at Jefferson City, Mo., to prevent Richard F. Ralph from becoming receiver. The court also restrained the lower court at Clayton from further action in the case. Lawyers representing the Fulton company before the supreme court alleged no notice had been given of the second receivership action and that the company had no opportunity to be heard. The action is now transferred to the supreme court, which will set a date for a hearing to show cause why a receiver should be appointed.

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## Alloy Plant Resumes

Plant of Superior Alloys Ltd., Sault Ste. Marie, Ont., which has been closed since June, is preparing to resume operations as soon as a cargo of manganese now enroute arrives from Montreal, Que. The plant, hitherto producing ferrosilicon, will manufacture ferromanganese for the first time.

# EDITORIAL

## Internationalization Will Expand Markets

AS A rule American manufacturers display only casual interest in what is going on in foreign countries. To every company which is cultivating overseas markets intensively there are hundreds and perhaps thousands which do not give a thought to the possibilities of trade beyond the geographical limits of this country.

We believe this attitude on the part of the majority of American industrial concerns is unfortunate. Regardless of the present world wide depression and in spite of the alleged hindrance to foreign trade resulting from the recent tariff, America is destined to play an increasingly important role in the business of the world. Our manufacturers should recognize this fact and prepare for the time when conditions will favor more active participation in foreign marts.

Up to a few years ago many of the European and Asiatic countries were not considered profitable markets for manufactured products which enjoy mass consumption in the United States. It was assumed that standards of living were too low to permit the widespread use of automobiles, electrical refrigerators, washing machines and numerous similar products. Wages in these countries were known to be extremely low compared to American standards. These and other conditions—largely economic and political—were accepted as sound reasons why the scale of living could not be elevated for many years to come.

### World's Standard of Living To Rise More Rapidly

But now there are signs that these assumptions may have been wrong. In spite of serious trouble in India, China and South America, of an unprecedented experiment in Russia, of unusual difficulties in Great Britain and throughout part of its great empire, of unsolved postwar problems in Germany and France, of hardship in Italy and of depressed business generally—notwithstanding all of these discouraging factors, it is probable that standards of living throughout the world will rise more rapidly in the next decade or two than they have in the past century.

The primary basis for this expectation is the trend toward broader vision for all peoples of the globe. Radio, moving and talking pictures, and other improved devices of communication are making this a smaller world. The majority of the items of modern household equipment are as well known to the resident of the smallest village in Arkansas or Idaho as to the average citizen of New York or Philadelphia. Similarly, the story of more attractive standards of living is being told by loud speaker, screen and printed page to millions in Europe and Asia. The seed of desire for an easier existence is taking root on those continents.

Recently a number of American automobile manufacturers established European plants for manufacturing and assembling motor cars. The Ford Motor Co. has announced its intention of paying European workers as much, in relation to the cost of living, as it is paying its employes in the United States. This statement has aroused much speculation at home and abroad.

### Greater Sales Opportunities To Bring Keener Competition

The internationalization of business is increasing by leaps and bounds. The electrical equipment, sewing machine, farm implement and other activities of American companies in Europe are well known. European operations in America are increasing. English, French and German influence on our industrial activity is more pronounced than before the war. As this exchange of experience continues, provincial trade barriers will be less formidable.

What this would mean to the industrial countries is almost beyond calculation. Imagine, for instance, the demand on the production facilities of the world which would be imposed if the several hundred million inhabitants of Europe were to adopt telephones, central heating, plumbing, electrical refrigeration, washing machines, automobiles, etc., at the same rate per capita as these articles are now distributed in the United States and Canada.

But internationalization of consumption will also bring new problems of competition. American manufacturers cannot hope to share in the development of these rejuvenated markets without having to prove their right to do so against foreign competitors. American companies have the advantage of experience with mass production. European manufacturers have the advantage of long time experience in foreign markets.

Because the foreign fields offer such attractive possibilities for future development, manufacturers in the United States should take a more direct interest in European and Asiatic developments.

# Tomorrow's Prices and Profits

Noted Economist Looks for Continuance of Prices at Low Levels, with Raw Material Quotations Rising Moderately and Finished Product Prices Declining Under Pressure of Competition

TWO factors—prices and profits—stand out in every discussion of business conditions. In speaking on the subject "Outlook for Prices and Profits" at the annual meeting of the Ohio Manufacturers' association at Columbus, O., Nov. 12, Dr. David Friday, banker and economist and former president of the Michigan Agricultural College, presented an unusually clear and concise statement of the present depression and of the probable trend of recovery. His remarks, as abstracted in a summary prepared by the association, follow:

Dr. Friday's concluding message, carrying a note of optimism, was that the return of prosperity may be expected during the coming spring, for "when people get as pessimistic as they are right now, you can depend upon it the end is not far off." Yet it carried an undertone of warning, that the fat days that are coming still will be less fat than those of the preceding cycle, for in his opinion, it may be a lifetime before those high levels are equaled.

## Lower Price Level «a Permanent Thing in Our Lifetime»

"Prices are on a lower scale than we have known for some time," he advised, "but many classes of people are going to be happier because their money will go farther. This lower price level will be rather a permanent thing in our lifetime, I believe."

In opening his analysis of the depression, Dr. Friday avoided a flat statement of opinion as to its cause but gave what he considered contributory causes rather than positive assertions. One of these probable causes, he declared, was the stabilization pools in various products, formed to keep the prices of certain articles far above the cost of production. He cited the rubber pool of Great Britain which caused rubber to sell at more than a dollar a pound before it dropped to ten cents. While the British were running the rubber pool, he explained, the Dutch were undermining it by selling at much lower prices. The same thing happened in Japan with silk, in Australia with wool, in Brazil with coffee, in America with copper and in Canada with wheat.

In referring to the future, Dr. Friday stated that in his opinion greater profits are to be found in the use of additional machinery to reduce production costs and to increase efficiency. He said the solution of the farm situation was to be found ultimately in mechanization of agriculture and reduction of the number of farmers to the point where all may earn comfortable livelihoods.

## Profits Are More Dependent Upon Production Than Upon Prices

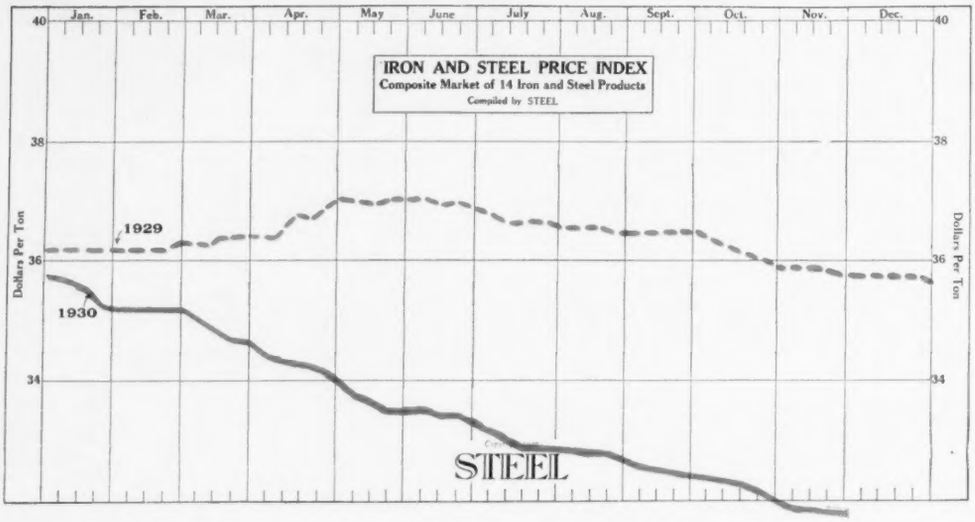
His argument was that profits are more largely dependent upon production than upon prices, and said that even at this time of reduced output the volume is nearly as great as during the boom times of 1919. He said there has been a continued decline in commodity prices, which have been a disturbing factor. Another important item in delaying return of industrial activity has been the world-wide political disturbances in China, India, South America and Europe.

Dr. Friday quoted some interesting comparative figures showing commodity and finished product prices, production volume and profits. He brought out that the last 12 months has brought about a decline of 15 per cent in wholesale prices; farm products have fallen 20 per cent; foods have gone down 14 per cent; and all other commodities have lost 10 per cent.

## Outlook Is For Slight Rise in Raw Material Prices

On the whole raw materials have fallen about 20 per cent, and have declined much more than finished products. Many people believe that prosperity cannot return until these prices rise and that profits cannot be satisfactory as long as prices remain low. As profits depend more upon volume of production than upon price level, the outlook for future prices is for a continuance on this present general level with raw material rising somewhat, and finished products declining under the pressure of competition.

# THE BUSINESS TREND




**Weekly Figures**

| | |
|---|---|
| Nov. 26 | $31.86 |
| Nov. 19 | 31.86 |
| Nov. 12 | 31.98 |
| Nov. 5 | 31.98 |
| Oct. 29 | 32.06 |
| Oct. 22 | 32.14 |

**Monthly Averages**
1930

| | |
|---|---|
| Nov. | $31.92 |
| Oct. | 32.26 |
| Sept. | 32.65 |
| July | 33.21 |
| Nov., 1929 | 36.03 |

## Pulse of Trade Quickens, But Production Lags

BUSINESS has arrived at the threshold of the final month of the year and as yet nothing has occurred to lift the veil of fog which has covered the valley of depression during the past 90 days. Whether business as a whole still is slipping downward, is on the very bottom of the valley or is creeping slowly upward will not be known until the situation clears sufficiently to afford a clear perspective view.

Industrial activity, as measured by weekly production figures, continues to decline moderately. This is particularly true of the basic industries. The output of bituminous coal has dropped slightly. In the steel industry, operations are down to within striking distance of 40 per cent of capacity, with little hope of rising decisively until after the beginning of the new year. Activities in the building industry are slightly improved, due to a better than ordinary showing of residential construction. Non-residential building, however, is tapering off.

### Low Production Schedules Expected for Remainder of Year

Operations in the automobile industry have been buoyed up, temporarily, by a few builders who are engaged on new models. This momentary spurt may have been sufficient to lift November's production above the low total of October.

Car loadings for the week ending Nov. 15 were 5 per cent lower than in the previous week, which included election day. Freight volume is declining seasonably, but not as rapidly as it did in the corresponding weeks of 1929.

In spite of these various indications of the relatively low state of industrial activity, business sentiment continues to improve. Signs of greater activity in trading are abundant. Inquiries and orders for steel and other industrial commodities have appeared in good volume during the past week. While most of this activity has no bearing on present production schedules, it is encouraging to those whose order books have been starved for many months.

The financial situation has not changed perceptibly, although there seems to be a slight improvement. The averages of stock and bond prices are slightly higher than a week ago. Commercial and other loans have increased somewhat.

### Soft Spots in Commodity Markets Retard Improvement in Prices

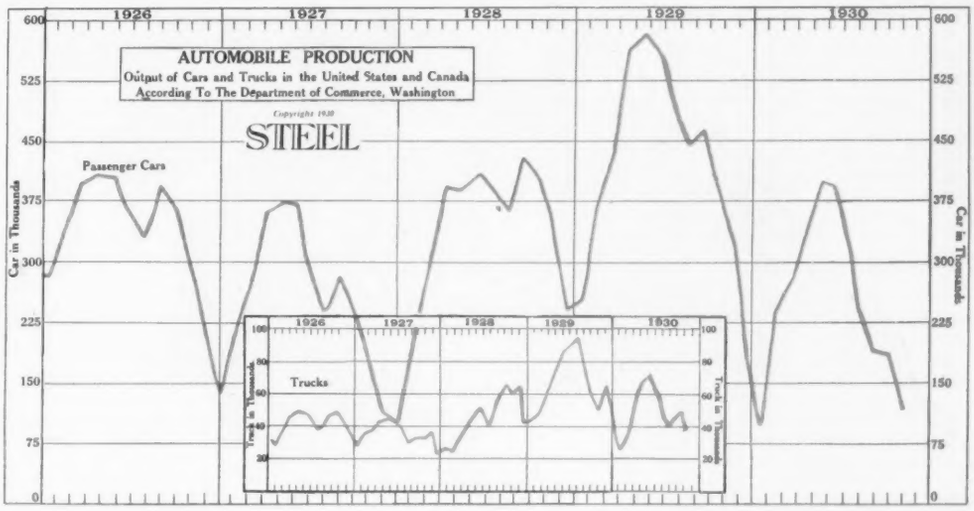
Commodity prices still are unsettled. Further declines have occurred in a number of indices of wholesale prices. On the other hand, some of the agricultural commodities have firmed slightly. Steel prices are practically stationary, although a few changes may be expected before the real upward turn develops. STEEL's composite of 14 steel and iron products remains at $31.86. The average for the four weeks of November was $31.92. During the past four or five months downward revisions have been recorded in most of the finished steel products and in pig iron quotations. Semi-finished material has escaped in recent adjustments. The $31.86 level, which was reached Nov. 20, may hold through Dec. 3, although there is a slight possibility it may slip off slightly. However, the tone of the present market is such that no further drastic reductions seem imminent. Shapes, plates and bars have withstood their test surprisingly well, and there is a refreshing note of firmness in the finished steel market.

**Passenger Cars**

| | 1930 | 1929 |
|---|---|---|
| Oct. ..... | 116,006 | 328,305 |
| Sept. ..... | 186,579 | 375,046 |
| August .. | 194,234 | 452,857 |
| July ..... | 231,256 | 439,598 |
| June ..... | 301,898 | 469,260 |

**Trucks**

| | 1930 | 1929 |
|---|---|---|
| Oct. ..... | 38,579 | 66,235 |
| Sept. ..... | 44,309 | 54,683 |
| August .. | 38,606 | 59,985 |
| July ..... | 41,295 | 78,703 |
| June ..... | 48,669 | 98,164 |

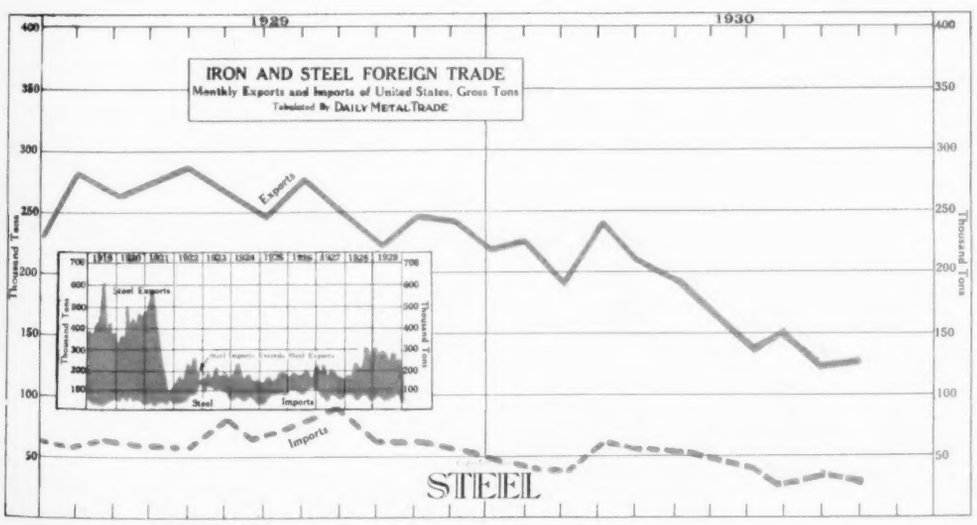



## Production of Automobiles Falls Off to New Low in October

The month of October was the lowest of the year in the production of automobiles in the United States and Canada. The total of 154,585 cars was 33 per cent under September, 60 per cent under October, 1929, and the lowest figure for nearly three years, excepting only last December. Production during ten months of 1930 is about 40 per cent behind that of the same period of 1929. Indications during the month just past point to the probability that November production will be nearer the levels of August and September, due to increased operations in preparing new models. Unless this increase carries over into December, the final month will no doubt repeat its usual record of slack production.

## Iron and Steel Imports Decline in October, Exports Gain Slightly

October foreign trade in iron and steel displayed no substantial changes from that of September. Exports made a very slight gain, totalling 131,850 tons as compared with 131,211 tons in September. Imports showed a more noticeable trend by decreasing from 40,285 tons to 38,344 tons in October. The balance between the two amounted to 115,848 tons in August, 90,926 tons in September and 93,506 tons in October. The recent trend has been toward a diminishing difference, due principally to decrease in exports. October imitated on a smaller scale the most recent reversal of this tendency, a temporary change which took place in August. In October, 1929, exports made an advance to 247,646 tons and imports advanced to 63,226 tons.




**Exports**

| | Tons |
|---|---|
| Oct., 1930 | 131,850 |
| Sept., 1930 | 131,211 |
| Oct., 1929 | 247,646 |

**Imports**

| | |
|---|---|
| Oct., 1930 | 38,344 |
| Sept., 1930 | 40,285 |
| Oct., 1929 | 63,226 |

# "I am ARC WELDING . . . I give Greater Value"

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UNA WELDING & BONDING COMPANY
Cleveland, Ohio

WILSON WELDER & METALS COMPANY
North Bergen, N. J.

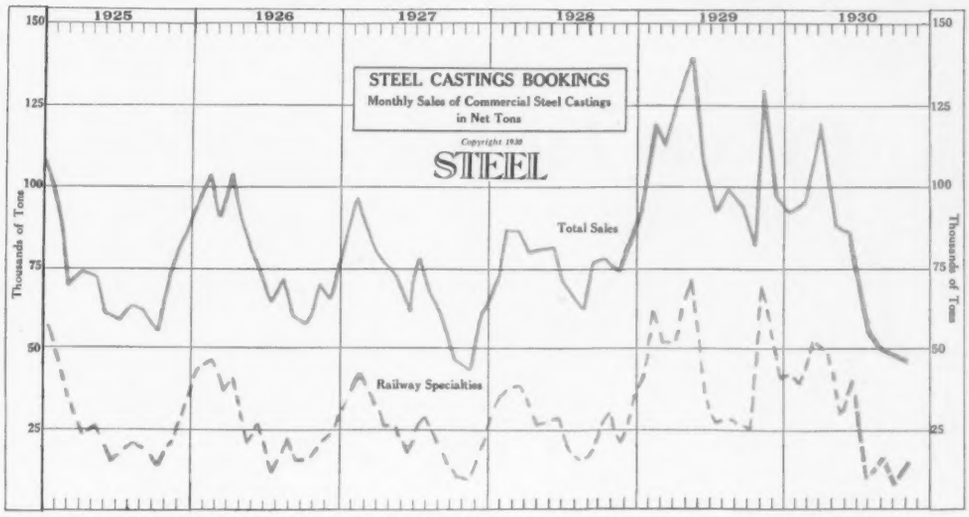
NORTHWESTERN MFG. COMPANY
Milwaukee, Wis.

**Total New Bookings**

| | Tons |
|---|---|
| October, 1930 | 45,546 |
| September, 1930 | 49,542 |
| October, 1929 | 136,208 |

**Railway Specialties**

| | |
|---|---|
| October, 1930 | 13,206 |
| September, 1930 | 11,148 |
| October, 1929 | 72,432 |

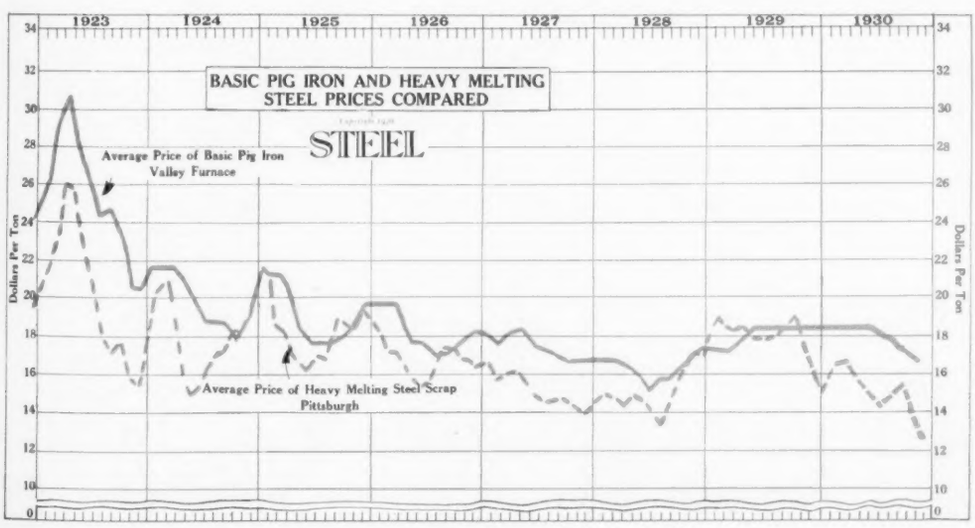



## Steel Castings Orders Continue Fall Despite Increase in Railway Specialties

Again in October new orders for commercial steel castings declined, for the seventh successive time, but bookings of railway specialties increased enough to remove a large part of the loss sustained by them in September. A total of 45,546 tons of steel castings were booked in October as compared with 49,542 tons in the preceding month and 136,208 tons in October, 1929, the latter representing a secondary high peak of that year. Orders for railway specialties amounted to 13,206 tons in October, an increase of 2058 from September. The 1930 ten-month total for all steel castings is 788,651 tons, far under that of 1929 and well below that of 1928, but strikingly similar to the 1927 ten-month total, 782,408 tons.

## Steel Scrap Prices Lose Further Ground and Pig Iron Continues Its Decline

While pig iron prices settled to a low figure in November, prices of steel scrap broke as sharply as in the preceding month and slid to 1921 levels. All through the month basic pig iron, valley furnace, stood at $17, a price established in mid-October. Heavy melting steel scrap, Pittsburgh, averaged $13.20 as compared with $14.40 in October and $16.30 last November. September, 1921 was the last month averaging a lower price in heavy melting steel. As melters withdrew and demand came to a standstill, scrap prices pointed steadily downward, but at the end of the month there were a few signs of quickening interest. Pig iron prices were more solidly entrenched late in October than for many weeks, and sales improved slightly.




**Basic Pig Iron**

| | 1930 | 1929 |
|---|---|---|
| Nov. | $17.00 | $18.50 |
| Oct. | 17.20 | 18.50 |
| Sept. | 17.75 | 18.50 |
| Aug. | 18.00 | 18.50 |
| July | 18.20 | 18.50 |

**Heavy Melting Steel**

| | | |
|---|---|---|
| Nov. | $13.20 | $16.30 |
| Oct. | 14.40 | 17.30 |
| Sept. | 15.70 | 18.45 |
| Aug. | 15.19 | 18.90 |
| July | 14.90 | 18.45 |

# Today's Pressure . . .

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**THE ASSOCIATED BUSINESS PAPERS, INC.**

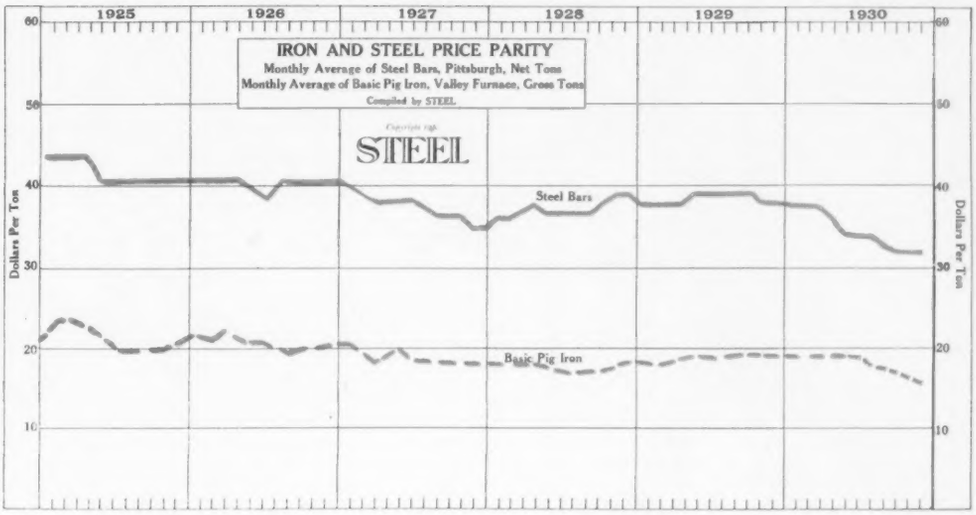
**TWO-NINETY-FIVE MADISON AVENUE · NEW YORK CITY**

**Steel Bars**

| | 1930 | 1929 |
|---|---|---|
| Nov. | $32.00 | $38.00 |
| Oct. | 32.00 | 38.00 |
| Sept. | 32.00 | 39.00 |
| Aug. | 33.00 | 39.00 |
| July | 34.00 | 39.00 |

**Basic Pig Iron**

| | | |
|---|---|---|
| Nov. | $17.00 | $18.50 |
| Oct. | 17.20 | 18.50 |
| Sept. | 17.75 | 18.00 |
| Aug. | 18.00 | 18.50 |
| July | 18.20 | 18.50 |

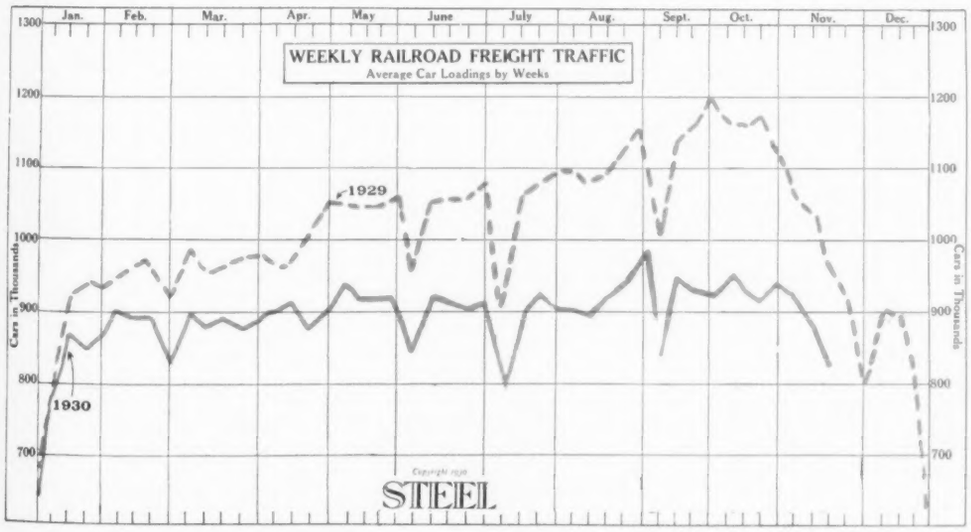



## Pig Iron Prices Establish Another Low but Steel Bars Again Hold Firm

Quotations in basic pig iron, valley furnace, established another low monthly average during November at $17, while prices of steel bars, Pittsburgh, held, on a firm price stand, at $32 for the third consecutive month. The October average for pig iron, at $17.20, was based upon a change from higher quotations to $17, whereas the November figure prevailed throughout the month, without change. The price of $17, the lowest since October, 1928, has been maintained since mid-October. Slight gains in buying encouraged the steadiness of bar prices at the end of the month and an increased interest in pig iron late in the month tended to help firm prices.

## Railroad Freight Movement Registers Drop, Attributed to Seasonal Trend

Another sharp drop in the car loadings of revenue freight lends credence to the supposition that the seasonal decline has set in. For the week ended Nov. 15 a total of 829,251 cars was loaded, as compared with 881,401 cars in the week ended Nov. 8, a decrease of about 5.9 per cent. Last year the decrease during comparable weeks was from 1,048,968 cars to 982,926 cars, or about 6.39 per cent. Although activity in car loadings has continually been at a level considerably under that of last year, there is some comfort in the fact that the last-quarter drop started a little later this year than last, and is declining at a pace not quite so fast.




**1930**

| | |
|---|---|
| Nov. 15 | 829,251 |
| Nov. 8 | 881,401 |
| Nov. 1 | 934,640 |
| Oct. 25 | 959,335 |
| Oct. 18 | 931,085 |
| Oct. 11 | 954,874 |

**1929**

| | |
|---|---|
| Nov. 15 | 982,926 |
| Nov. 8 | 1,048,968 |
| Nov. 1 | 1,072,234 |
| Oct. 25 | 1,134,359 |
| Oct. 18 | 1,185,564 |
| Oct. 11 | 1,179,540 |

# THE YEARBOOK

ANNUAL
STATISTICAL
ISSUE

## JANUARY 1, 1931

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# Finishing 10,000 Pocket Knives Daily

## Automatic Machines Now Perform Handiwork of Old-Time Cutlers

BY H. R. SIMONDS
Associate Editor, STEEL

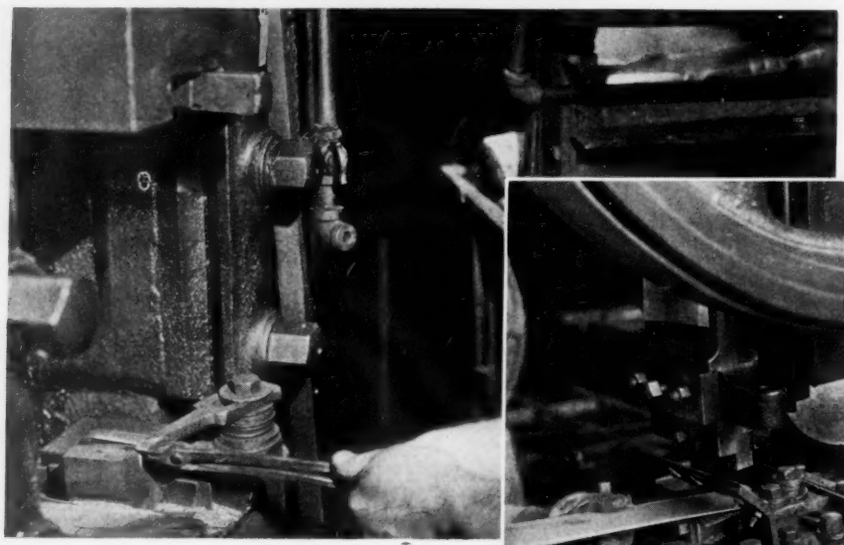
UNDER the stress of modern competition former methods of finishing cutlery gradually are disappearing, although a few plants still exist where old-time experienced cutlers, seated at large natural sandstone wheels, produce fine edged cutlery and tools by hand. Large cutlery plants today are strictly modern and in the transition from the hand method to the production machine method it was difficult at first to maintain the high quality standard set by old-time cutlers. However, the development of mechanical equipment has been so rapid during recent years that many plants claim to have increased the quality of their product coincident with the development of modern mass production methods. One of these, the Remington Arms Co., Bridgeport, Conn., now produces more than 10,000 pocket knives a day with nearly all operations on automatic or semiautomatic machines and with the quality of the product better than heretofore obtainable. The grinding of a pocket knife blade for many years was considered strictly a hand operation, but it is accomplished now at the rate of 700 blades per hour per man on ingenious semiautomatic machines.

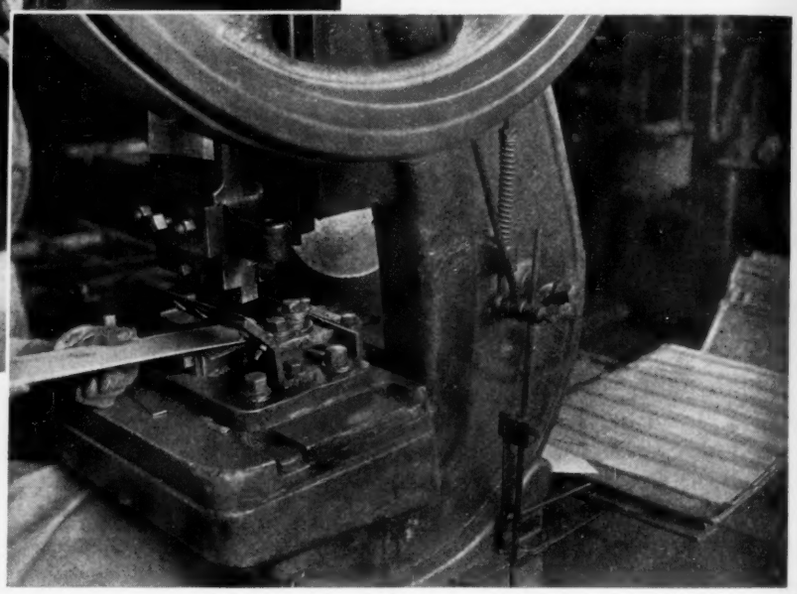
A so-called precision method of manufacture and assembly is used in the Remington company's production of pocket knives. Formerly skilled workmen were required to fit each blade to its individual handle to make sure that it closed properly and that it had the proper position when open. With this method each cutler who assembled the knives had a small grinding wheel in front of him on which he ground the shoulder and other surfaces of the blade until he obtained the correct action of the blade in its handle. The method of manufacture of the Remington Arms

*Blades are put through this lead bath hardening process at a rate of 15,000 per day, one man handling the work*

Co. is entirely different. Each component part is made accurately to dimensions on specially designed machines and by workers who make nothing else but this certain part. Specifications are such that all parts are exactly alike to the thousandth of an inch so that when they are assembled a perfect fit is assured without any grinding or trial and selection.

The plant is claimed to be the largest of its kind in the world. Steel for the blades and various other parts is received in carload lots on a siding at the rear of the plant and is transferred to the proper racks or piles in the raw steel storeroom. The material for the blades is high-carbon special analysis sheet steel received in different thicknesses according to the different sizes of the blades to be made. From 0.07 to 0.80 per cent carbon steel is used for springs and 1.10 per cent carbon steel for blades. The sheets range from 17 to 20 inches wide and from 3 to 4 feet long. Test pieces are taken from each sheet and sent to the company laboratory where rigid specifications must be met.





*FORGING the knife blades, shown above, is accomplished at a rate of 300 per hour. At the right is the small press which blanks the blades from strip steel. Leaving the press, the blades are stacked automatically in the container, shown lower right of the illustration*

### Blades Cut from Sheet

The blade is the vital part of the knife and unusual care is taken in its manufacture. The steel sheets are first cut into strips of the desired width on a large power shear. The strips are the length of the sheets and are from 2½ to 4 inches in width to correspond with the length of the blade. These strips then are cut into small pieces which have the approximate shape of the blade. In order to alternate the large ends and thus reduce the amount of scrap the strip is reversed between each cut.

The small blade blanks from this operation are ready for the forging department and are placed on specially designed racks which are placed in small gas-fired furnaces, one of which is located near each hammer. The forging operation itself is rapid and seemingly simple but nevertheless requires skill and experience on the part of the operator. The forging is done between two flat surfaced dies which instead of being parallel are set at a slight angle conforming to the taper of the blade. The operator must know just where to hold the piece between the dies and just how many blows to give it. When forging a blade for the average size knife an experienced man will produce 300 pieces an hour. To attain this speed calls for motion study and careful arrangement of apparatus. The tote box which receives the finished forgings is directly under the furnace so that the same motion which drops a piece into the container carries the tongs into position to pick up the next piece from the furnace.

The forged blades return to the stamping department where presses equipped with specially designed dies stamp out the exact shape of the finished blades, leaving an irregular edge flashing which is blown off the die by compressed air. The blade drops through the lower die into a container below. Skill in this operation is required in the proper location of the forging since its irregular form before punching prevents indexing by jigs or stops. Nevertheless, experienced operators turn out over 1000 blade stampings an hour.

From the punch press the blades go to a semiautomatic piercing machine where the holes for the rivets are pierced and then while the steel is still soft several grinding operations are performed. The tang or base of the blade is ground on both sides at one time in a double header polishing machine. This machine uses walrus hide wheels, 14 x 1 x 2 inches, revolving at 1600 revolutions per minute. The walrus hide is covered with a mixture of glue and No. 120 emery, and production on the machine ranges from 1200 to 1500 blades an hour.

### Heat Treatment Important

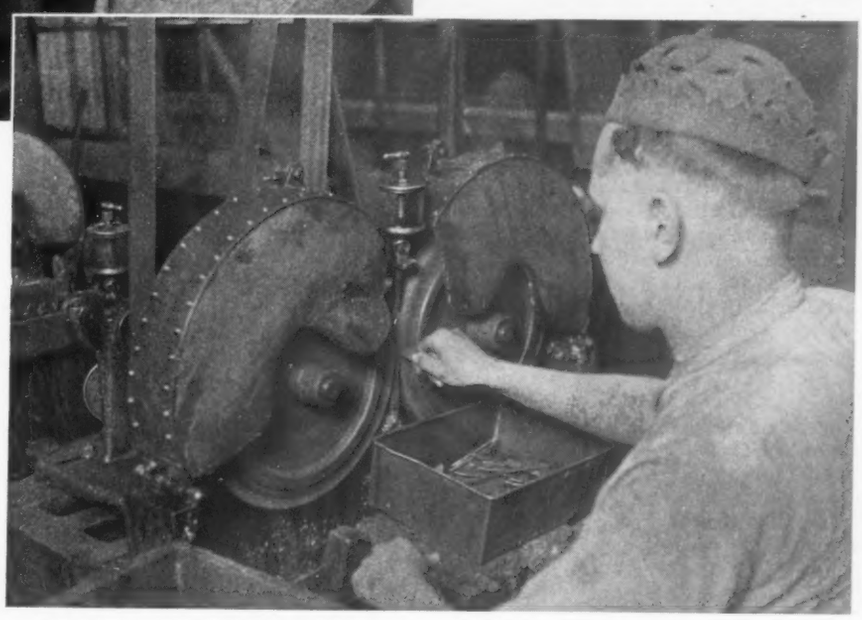
Success in manufacturing pocket knives depends to a large extent on heat treating methods. The Remington Arms Co. has utilized its experience in hardening and tempering gun parts in the heat treatment of knife blades. The arrangement of lead bath and quench tanks for blade hardening is shown clearly in an accompanying illustration. The standard containing the rack ready to be placed in the furnace is at the operator's right and the quench tank is shown in the background at the operator's left.

The heat treating process is rapid and one man is able to harden 15,000 blades a day. With tongs he picks up racks at his right, places them in the furnace and with the same motion picks up other racks from the furnace to carry around to the quench tank at his left. Exhaust pipes are provided to carry away the fumes and an overhead fan supplies the operator with an abundance of fresh air. Six hardening furnaces of this type are used in the heat treatment of knife blades and in order to avoid interruption and keep the operators free from extraneous work a service man

is assigned on full time to look after the equipment, to test temperatures and make any minor repairs which may be needed. The oil for the quenching is circulated continuously through a central cleaning and cooling plant located in the basement of the building.

The blades are tempered in a long revolving tubular gas-fired furnace. The inside of the tube or drum is maintained at 550 degrees Fahr. and it revolves 10 times per minute. The charge is mixed with silica sand and is left in the furnace about 15 minutes, after which the blades are ready for grinding and polishing and finally go to the assembling room where the springs, bolsters and handles are assembled to make a complete unit.

*LARGE blades are polished on dry wheels at a rate of three blades per minute, as shown above. Left shows the glazing operation, the knife being held in a wooden jig against a walrus hide covered wheel. Below is a double header polishing machine which grinds both sides of a blade simultaneously at high speed*



After assembling, other grinding and polishing operations follow until eventually the knife reaches the final inspection department and then passes on to the shipping room.

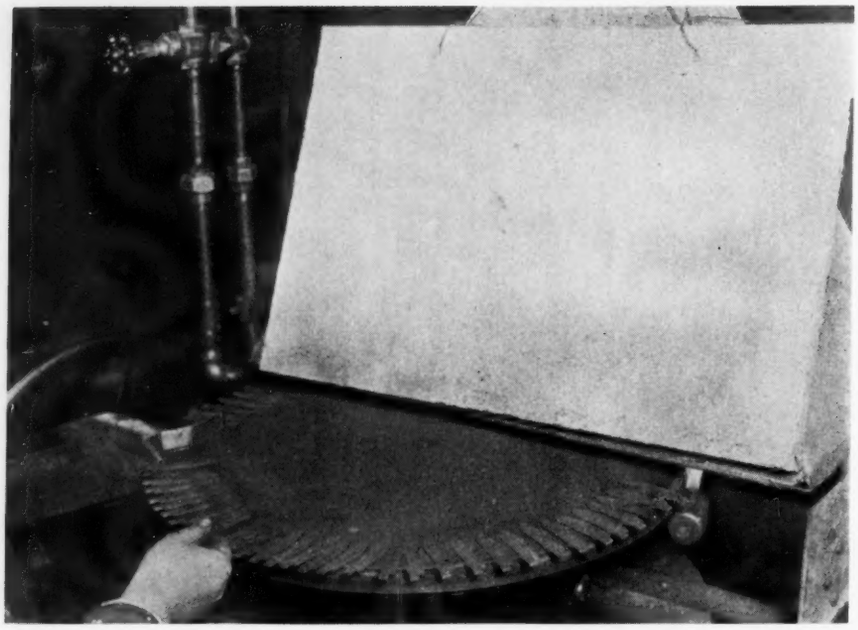
### Other Parts Hardened

Heat treatment is not confined to the blades as nearly every part entering into the knife assembly undergoes some annealing or tempering process. For certain grinding operations the tangs are annealed on a specially-designed machine in the operation of which blades placed on a slowly revolving disk are carried through a gas flame under the hood at the rear and then on around to a guide which automatically brushes them off the disk into a metal chute. Springs are hardened by heating to 1400 degrees Fahr. and quenching in oil at room temperature.

An annealing furnace is used for annealing some of the blades and many of the other parts such as liners and bolsters. Some of the liners are annealed at 1650 degrees, allowed to cool in pots, and then pickled in a sulphuric acid solution and tumbled with sawdust.

Blades and springs are ground on nearly all surfaces and all the component parts of the usual type of pocket knife are polished or buffed with the exception of the rivets. The sides of the blades are ground on special vibrating grinders in which a jig or holder about 16 inches long is hinged at one end and has its other end connected to an eccentric which gives it an up and down vibrating motion through a space of about 1 inch. The blade to be ground is fastened on the side of this jig and the grinding wheel which is a ring wheel is moved back and forth over the face of the blade at the same time the blade is vibrating. The wheel used for this operation is a No. 6-21-S wheel measuring 14 x 3½ x ⅝ inches. A stream of water flows constantly on the wheel during grinding.

Certain types of blades are polished on the double header machine shown in one of the illustrations. Produc-



*Blades are placed on this revolving disk and the bases annealed by being passed through a gas flame*

tion in this operation is about three blades per minute, both sides being polished with dry wheels. The back of the blade is ground at the rate of 30 blades per minute on a No. 60M emery wheel, 12 x 1 x 2 inches. It is then polished with a walrus hide wheel, 12 x 2 x 2 inches, and coated with a mixture of grease and flour emery. Blade glazing is an important operation and several methods are used; one is with an 18 x 1 x 2-inch wheel using a wooden jig and a steel rest, as shown in an accompanying illustration, in which the operator is holding a knife, edge up, in the position used in glazing. A rather curious international dispute centers around this particular operation. American practice favors the wheel revolving toward the edge of the knife while the German practice favors the wheel revolving away from the knife edge.

Soft wheels on which are mounted 2-inch strips emery cloth are used for polishing the bolsters and shields and some of the handles. Another wheel used for polishing is covered with thin leather and is dressed with glue and No. 200 emery. Careful inspection follows nearly every grinding and polishing operation. After completely assembling the knives are given a final overall polish on buffing wheels.

## Cites Use Of Oxyacetylene Welding in Far North

In connection with an illustration on Page 28 of the Oct. 30 issue of STEEL, showing an electric welding machine shipped to a location 625 miles north of Edmonton, Alberta, Canada, the following letter has been received from the technical publicity department of the Linde Air Products Co., 30 East Forty-second street, New York:

Nov. 1, 1930

E. L. Shaner, Editor,
STEEL

Dear Mr. Shaner:

We have noted with interest the picture of a welding machine on page 28 of the Oct. 30 issue of STEEL. The caption under this photograph refers to the fact that this machine was shipped to a point 625 miles north of Edmonton, Alberta, and says, "It is believed to have been the farthest north of any welding outfit on this continent."

This statement is hardly accurate, as very complete oxyacetylene facilities are installed in the shops of the Fairbanks Exploration Co. at Fairbanks, Alaska, a point which is considerably more than 625 miles north of Edmonton. In fact, oxyacetylene welding is used so extensively by mines and other northern Alaskan industries that a distributor of oxyacetylene welding and cutting apparatus and supplies is located at Fairbanks to supply their needs.

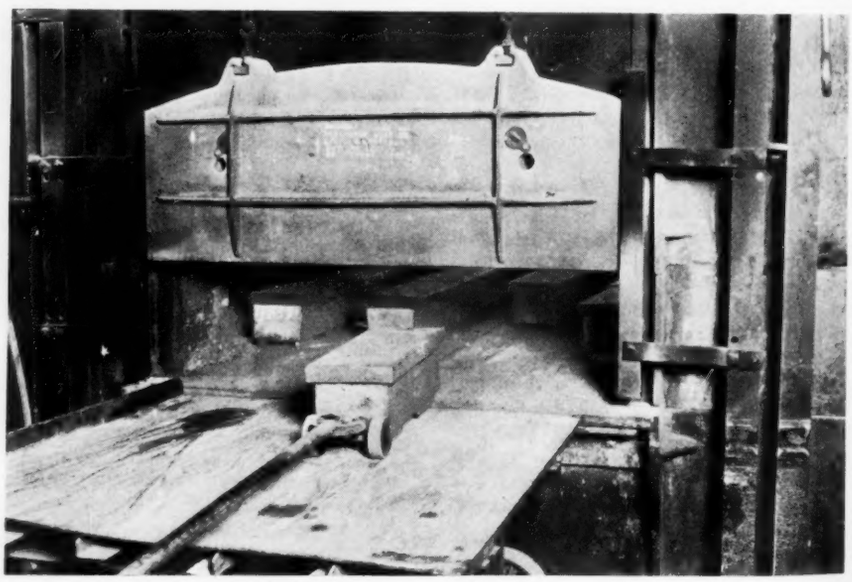
Aside from the usual applications of welding in the far north, polar expeditions such as the Wilkins expedition of 1926, have taken oxyacetylene outfits with them in airplanes so that emergency repairs could be effected.

We are bringing these facts to your attention simply because we feel that they will be of interest to you.

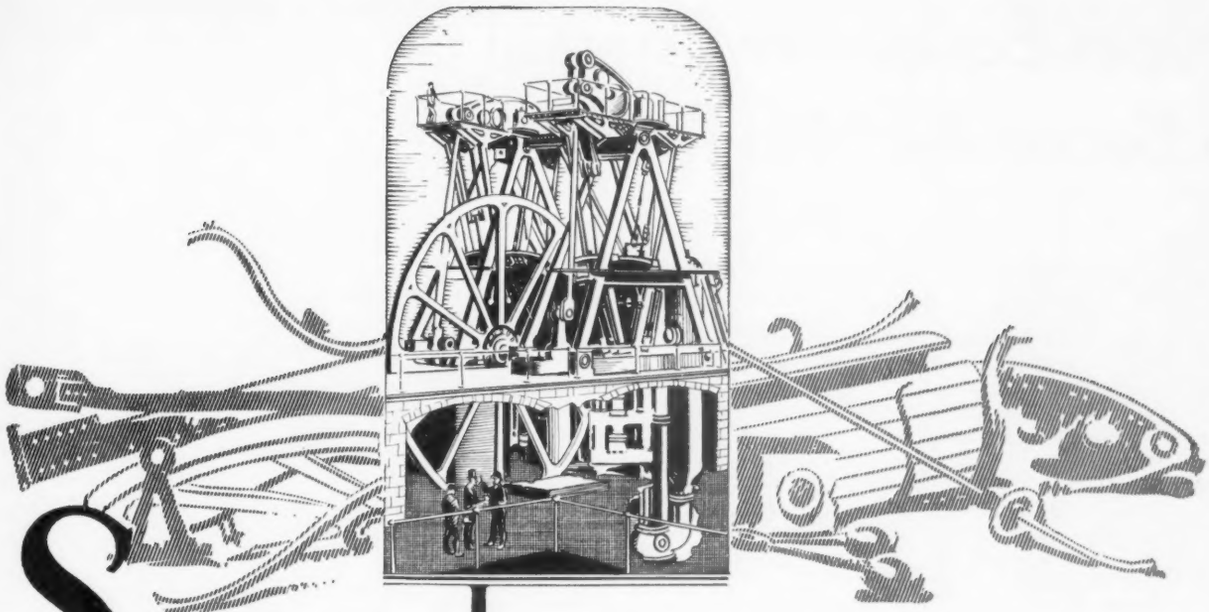
Very truly yours,
Technical Publicity Department
(Signed) DEW. ENDICOTT

## Foundrymen Plan Second Regional Meeting

The American Foundrymen's association will hold its second regional meeting in Birmingham, Ala., Jan. 20-21, 1931. The first regional meeting was held at Moline, Ill., March 26, in co-operation with the Quad City Foundrymen's asociation. No similar association exists in Birmingham but the foundrymen in the district are co-operating in plans for the meeting. The tentative program calls for a series of plant visitations on the first day and the presentation of technical papers on gray iron, steel, malleable and nonferrous foundry practice on the second day's schedule.



*Small parts for knives are annealed in boxes which are moved in and out of the furnace on the truck, as illustrated*



# *Scrap* those Obsolescent Machines

How many obsolescent machines are there in your plant . . . machines that are rapidly growing out of date . . . machines that can not keep up with today's demands in speed, production, precision, low operating charges . . . machines that are eating up your profits . . . machines that are sapping the very life blood of industry?

If you could reduce your power costs 20% with modernized machinery, wouldn't it pay you to scrap the obsolescent friction-ridden power wasters? Timken Bearings are doing just that in many types of equipment.

If you could save 80 to 90% of your lubrication costs, wouldn't it be worth your while to do away with machines that need so much more lubricant? In most types of machinery, Timken Bearings regularly effect such lubricating economies.

If you could increase the productive time of your machinery by eliminating involuntary shut-downs for bearing replacements, wouldn't it pay you to discard undependable equipment? Timken Bearings make all types of machines more dependable in even the hardest kinds of service.

If you could produce more accurate work in less time with fewer rejects, wouldn't you have a strong incentive to bring your equipment in line with modern developments? It is being done by Timken Bearings in all types of precision machinery.

If you could cut your maintenance costs 80 to 90%, wouldn't it be good business to throw out machinery that costs so much more for upkeep? Timken Bearings are minimizing maintenance in machines of all kinds.

When you consider that all of these potential benefits are available to you in modern "Timken Bearing Equipped" machinery, there isn't much room left for argument. With this thought in mind, it will pay you to check up on all of your mechanical equipment, remembering that there is *only* one combination that meets every modern anti-friction requirement—the exclusive combination of Timken tapered construction, Timken positively aligned rolls and Timken-made steel.

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# Proper Equipment Essential to Successful Nitriding

BY J. H. HIGGINS
Materials Engineer, Camden Forge Co.

NITRIDING of steel has reached such proportions as to make it physically impossible to cover in any short discussion the many principles involved in the process. Hence the scope of this article will be confined to existing practical conditions confronting the commercial user of the nitriding process. Although some of the statements to follow may appear contrary to the findings of other investigators, they are based on laboratory tests and nitriding experience at the Camden Forge Co., Camden, N. J., and represent the candid viewpoints of an organization actively engaged in commercial nitriding work.

Selection of steel is highly important since nitriding steels have a tendency to retain dirt and other inclusions. This is especially true of steel in the larger sizes and when such inclusions are present they weaken the core strength and promote nonuniformity of the case hardness.

### Machines and Forges Well

Nitriding steel forges best between 2150 and 2250 degrees Fahr. It flows freely and is unusually free of cracks or tears. Machinability depends entirely upon the hardness of the core; generally speaking, it cuts clean and free. Some trouble has been experienced when used in automatic machines, but this has been helped materially by the introduction of a steel containing high sulphur.

Quenched and tempered parts with sorbitic structures are considered superior to annealed material with large grain boundaries. It is claimed rightfully that nitrides penetrate the boundaries of an open structure and the result is a brittle and nonuniform case hardness.

Normalizing is an important operation since internal strains are always present in steel, whether they be produced by forging, tempering or machining, and unless they are removed by normalizing before finish machining, the steel undoubtedly will warp during the nitriding period. It is true that distorted parts can be straightened, but whether they remain straight when in service is a question.

Proper equipment is necessary to nitride successfully and this applies especially to the box or container. Two years ago, it was thought necessary to use only alloy containers. The Camden Forge Co. felt this was not compulsory and, accordingly, placed in service a low-carbon, structural steel container. This container was followed by others of a like composition, all of which gave service ranging from 700 to 1600 nitriding hours before rejection. The growth of the nitrides was followed carefully on metallographic specimens removed from the container after each charge. At present, enameled containers are under investigation, and results obtained to date give excellent promise of success. Three important factors are essential to a good container:

First: It must be absolutely air tight.

Second: A fan of sufficient size to circulate the heat and gases properly is necessary.

Third: Sufficient thermocouples are required to determine the temperature at all parts of the container.

Some authorities claim a fan is not necessary to good nitriding but experiments have proved it to be absolutely necessary, not only as an aid to the distribution of the gases, but the temperature as well.

Any type of furnace is satisfactory providing it can be held under control at the low nitriding temperature.

Several other factors have a direct bearing, not only to successful nitriding, but successful service of nitrided steels. For one, the danger of decarburization is not generally known or, at least, not appreciated. No single condition faces the commercial nitrider that causes more grief than a decarburized surface on nitriding steels. This is so general that a full charge is seldom completed without finding one or more forgings that have spalled, a condition which is usually due entirely to decarburization.

Repeated tests have been made to determine what amount of decarburization was necessary to cause spalling or flaking of the case; specimens have been prepared with decarburized surfaces ranging from 1/16-inch down to just a visible trace. There were seven of these specimens, all nitrided, and within a few days every specimen spalled or flaked on some part and to an extent proportionate to the degree of decarburization. Nitriding steels for some reason form a deeper decarburized or commonly termed "bark" surface than carbon or alloy steels treated at the same temperature.

The consumer should bear this in mind and not be governed by the amount of metal he is accustomed to remove on any of the S. A. E. steels. The depth of decarburization varies, but is usually gaged by conditions under which it was handled.

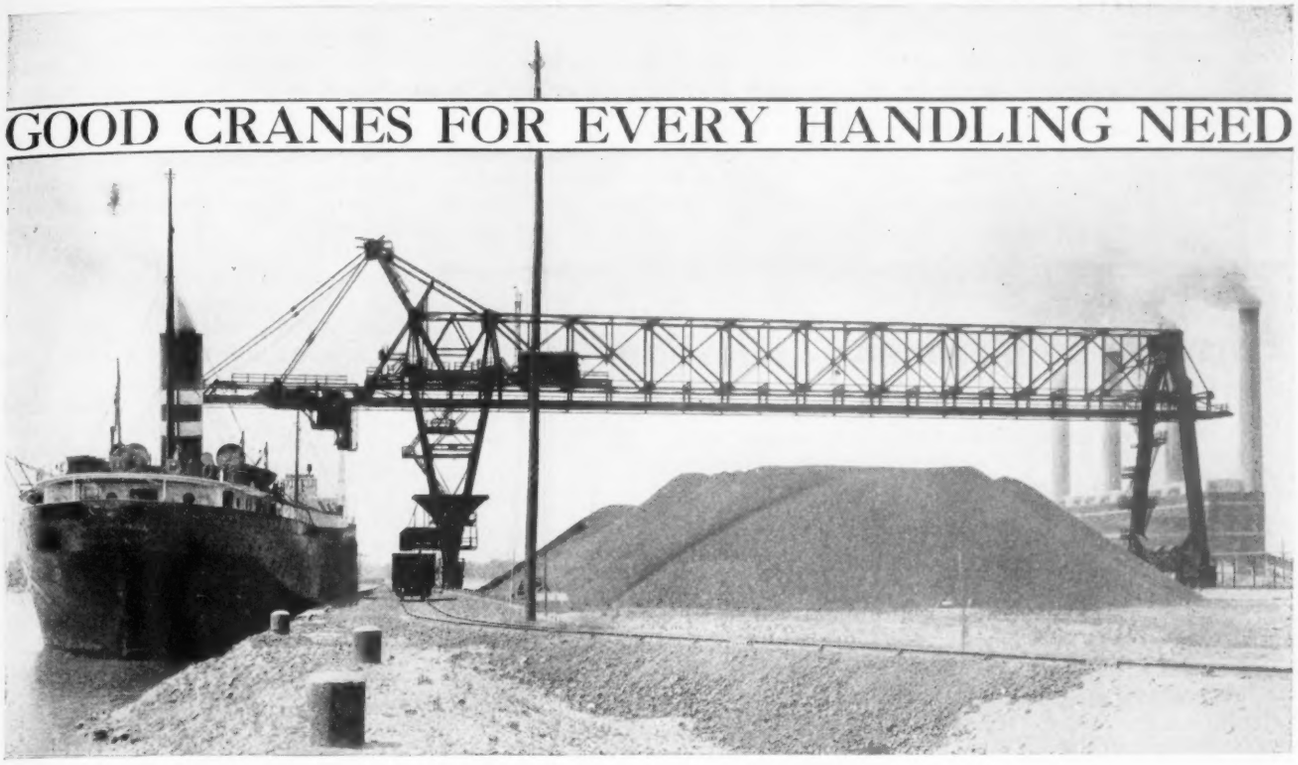
### Hardness Tests Difficult

The question frequently is raised how to determine the ductility of the case, and always the reply has been that it is unusually difficult to determine. It was thought that when a case was tested by the Vickers machine and the indentation spalled, brittleness existed. This is not reliable, for a slight tool mark on the surface will cause spalling or cracking of the case at the point of testing. The better method is to prepare a piece about ½-inch in diameter by 8 inches long; bend this in the usual way and note carefully when the case cracks. By this method, the load necessary to crack the case can be noted, as well as the extent of distortion. Ductility, to some extent, can be imparted to the case by the double cycle method of heating; that is, heat to 950 degrees Fahr. for a given number of hours, then elevate the temperature to 1150 degrees Fahr. and hold for about 2 hours. This will serve to toughen the case, but will reduce the hardness approximately 100 points. Some prefer using the higher temperature first, followed by the lower temperature but this, in the writer's opinion, does not produce the best combination of ductility and hardness.

The complete extent of the resistance of the nitrided case to corrosion

DISCUSSION of various steps in the nitriding of steel and conditions which at present cause the most trouble for commercial users of this popular low-temperature hardening method is presented in the accompanying article. A series of questions and answers on the following page should prove of much practical benefit. The information is from a paper presented recently before the Philadelphia chapter of the American Society for Steel Treating by J. H. Higgins, materials engineer, Camden Forge Co., Camden, N. J.

GOOD CRANES FOR EVERY HANDLING NEED



# Ordinary handling methods are far too costly today

Visualize this bridge crane, 437 feet long and handling 10 tons of coal at each bite of its giant bucket. Two hundred and seventy five tons of coal per lineal foot of dock front can be stored under its long span and the crane averages a trip a minute in unloading coal from vessels into storage.

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is not known at this time, for this is years to complete. Laboratory and in some cases service results have shown it to hold much promise. The surface is known to resist corrosion in hot and cold oils; gasoline; tap and salt water, both hot and cold; and ordinary atmospheric conditions. When more is known of this test, the field of nitrided steels should broaden considerably.

The welding of this steel, when nitrided, presents another field requiring much study and experimentation. Spot welding can be accomplished successfully without much effort; carbon steel flanges have been welded to nitrided bars; butt welds have been made but not with any great success. In welding the steel in its natural state, a loss of perhaps 50 per cent of the original aluminum content will take place. This seriously interferes in the nitriding of a uniform case. Many users of this steel are experimenting with this problem, and someone will no doubt discover a method of welding this steel satisfactorily in the near future.

A certain amount of growth due to nitriding occurs on all forgings and it is utterly impossible for a commercial nitrider to estimate this growth accurately before nitriding. Most of this uncertainty is brought about by the difference in preparation occurring in different shops. On solid rounds from 3 to 12 inches in diameter, the growth appears to be progressive and ranges from 0.00025 to 0.002-inch, depending not only on preparation but also upon the wall thickness and diameter. If the first of these three factors is controlled, the effect of the other two can be determined and should be constant for the same size.

### Heat Lowers Hardness

The effect of heat on the nitrided case plays an important part on forgings in service. A little more than a year ago, several well known authorities made the statement that the case would hold its initial hardness when heated up to 1800 degrees Fahr. Today this is disproved, for the case begins to lose its hardness when subjected to heat slightly above the nitriding temperature, and the loss increases as the temperature rises. Repeated tests have been made on pieces buried in fine turnings, then heated in an electric furnace at temperatures from 1100 to 1800 degrees Fahr., with the following results on eight different samples:

| Original case hardness | Annealing temperature degrees Fahr. | Case hardness after annealing |
|---|---|---|
| 1003 | 1100 | 895 |
| 974 | 1200 | 782 |
| 1003 | 1300 | 627 |
| 946 | 1400 | 514 |
| 1033 | 1500 | 473 |
| 946 | 1600 | 446 |
| 1064 | 1700 | 327 |
| 974 | 1800 | 246 |

Samples were nitrided 40 hours, annealed 1 hour, buried in fine steel turnings. Hardness readings were made on the Vickers testing machine.

To determine whether or not any of these pieces would renitride, all were placed in the ammonia gas for a period of 40 hours at temperature and then again tested. It was found that the case hardness increased only a fraction, except on specimen 8, where the increase was from 246 to 380.

In the writer's opinion, when the case hardness is destroyed by heat, it cannot be renitrided to its initial hardness, unless the original case is removed by machining.

The use of nitriding steels has in-

(*Concluded on Page 62*)

# Answers to Pertinent Questions

*At what temperature does nitriding start?*

It is generally understood that ammonia gas breaks up at about 880 degrees Fahr.; nitriding starts at that temperature or close to it.

*

*Does nitriding have any effect on core strength?*

Core strength is obtained by a heat treatment of the steel prior to nitriding. When the nitriding temperature is not higher than the initial drawback temperature, there is no appreciable change in core characteristics. If, for any reason, it is considered advisable to nitride at temperatures above the drawback temperature, then a reduction in core strength will result.

*

*Why should all sharp corners and edges be removed before nitriding?*

When nitriding material with sharp edges, the nitrides penetrate both sides as well as the edge, forming a hard, solid mass which, in some respects, is brittle. The lack of a supporting core at the edge permits spalling when struck even a slight blow. A very small radius on all edges eliminates this danger entirely.

*

*Will steel containing 0.50 per cent aluminum nitride as well as that of 1.50 per cent aluminum, and what should the range be?*

Aluminum has a high affinity for nitrogen. It is only reasonable to assume that the higher percentage would be more satisfactory. The range, in the writer's opinion, should be 1.00 to 1.50 per cent.

*

*Is satisfactory nitriding possible with any fuel, or is an electric or gas-fired furnace better than an oil-fired furnace?*

The writer believes it would be of little importance what fuel was used, providing the furnace was properly constructed to distribute the temperature uniformly throughout the nitriding box.

*

*Is it possible to obtain decarburization on materials while nitriding, or is this found only where insufficient material had been removed previous to nitriding?*

An excess of hydrogen will produce decarburization. This is caused by high dissociation. While this is possible, it is hardly probable, as all furnaces are equipped with dissociating equipment, which permits the operator absolute control of dissociation.

*

*Is there any possibility of the case separating from the core?*

The case gradually merges with the core and the possibility of one separating from the other is negligible.

*

*What is considered the best machine for testing the nitrided case, and why are the Rockwell and scleroscope type machines not considered practical?*

Several machines are used in testing the case, all of which rank high and have their respective favorites; the writer prefers the Vickers. It is hard to obtain good readings from the Rockwell machine, as the point penetrates through the case into the core and frequently shatters the case at the point of contact. It has been found almost impossible to obtain satisfactory readings on the scleroscope on nitrided or any other steels.

*

*Does molybdenum play an important part in nitriding steel, and why?*

Molybdenum is an important constituent. It imparts ductility to case and core.

*

*In various articles published on nitriding, opinions seem to differ as to which temperature produces the most satisfactory results. What can be said in this regard?*

If extreme hardness is required, the temperature of 950 degrees Fahr. is usually employed. If ductility, combined with hardness, is desired, then temperatures up to 1150 degrees Fahr. can be used. It must be remembered, however, that, while ductility of case is obtained, the hardness decreases to a marked extent.

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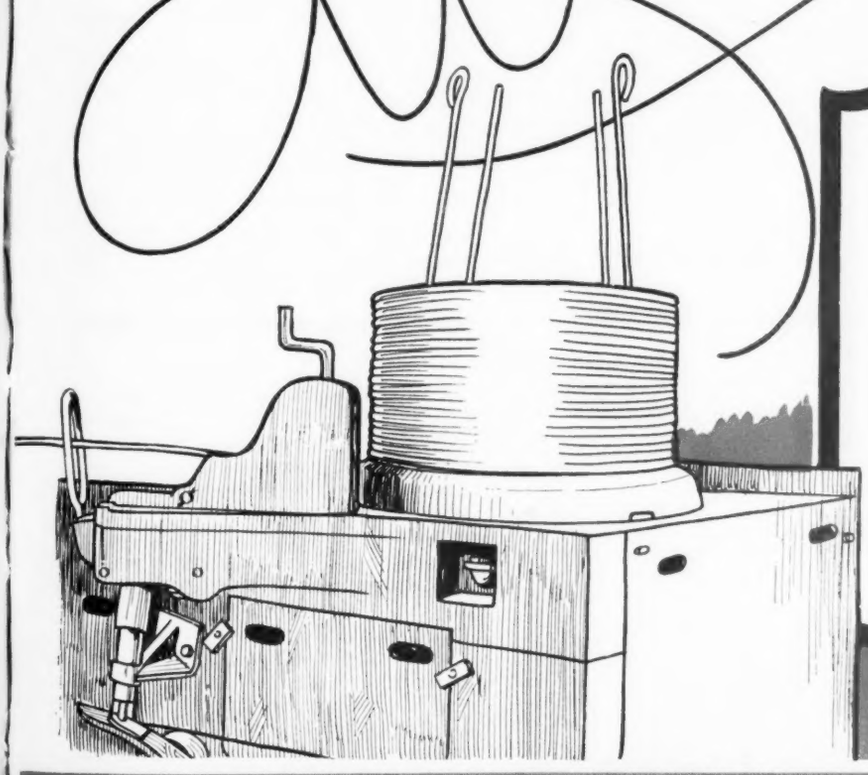

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# Use of Washed Furnace Gas Promotes Economy

BY W. A. HAVEN and C. B. THORNE

THE daily gas output of a 1000-ton blast furnace will have a fuel value equivalent to that contained in about 450 tons of coal. The most economical and advantageous utilization or disposal of such a large and valuable amount of by-product fuel has become one of the most important factors in the determination of pig-iron costs. Of the total gas produced, a sufficient amount must be reserved for heating the furnace blast to the highest temperatures which specific conditions will permit the operators to use. These will vary from 1000 to 1600 degrees Fahr., the physical and chemical quality of the raw materials being the chief limiting factors, Herein lies the most common opportunity of gas conservation. Not infrequently as much as 35 per cent of the gas produced is required for the stoves, whereas recent developments in stove design have made it feasible to meet the most exacting demands with a maximum of 25 per cent.

Another 30 per cent approximately can be used for generating steam and power required for the operation of the furnace itself. This is often, however, its least profitable use. If the by-product coking process is employed and there are better uses for coke-oven gas, blast-furnace gas can be burned under the ovens. The furnace-coke requirements alone will absorb about 25 per cent of the blast-furnace gas. If an open-hearth steel plant and rolling mills are included in the picture, from 20 to 45 per cent can be used there, mixed with coke-oven gas as a substitute for producer gas or other fuel.

In Table I an attempt is made to picture an ideal distribution of the by-product gases incident to the production of a ton of basic pig iron at a blast-furnace and coke plant operated in conjunction with an open-hearth steelworks and rolling mill. This is a purely theoretical set-up, but based upon results obtainable in practice with efficient equipment. The following assumptions are used:

1800 pounds of furnace coke produced from a charge of 2814 pounds of coal at the ovens corresponding to a yield of 64 per cent.

11,000 cubic feet of 540 B.t.u. coal gas produced per ton of coal charged.

1800 pounds of coke used per ton of pig iron produced.

135,000 cubic feet of 90 B.t.u. blast-furnace gas.

Using Table I as a basis, a gas-distribution chart has been included to show more clearly the relationship between the fuel and metal balances for such an operation.

In Table II is shown the cost of cleaning gas by several different methods giving the cleanliness expected in each case. The costs of final cleaning, i.e., from 0.15 to 0.008 grains per cubic foot as accomplished either by disintegrators or Cottrell precipitators are shown in the table, but since the wet Cottrell method in this country is yet to be tried out on a large scale, all subsequent uses of the cost figure of final cleaning are on the basis of those obtained from disintegrator operations. No charge has been made for water in these costs other than the expense of boosting the water pressure at the washers. Make-up water for gas-washer pumps is in most cases the cooling water from the furnaces which, it is assumed, already has been charged against the operation of the latter.

All gas used for underfiring coke ovens or at open hearths and steel-heating furnaces must be cleaned to the dust content obtainable in the old-fashioned Theisens, in disintegrators or Cottrell precipitators. The question of the degree of cleanliness most profitable for use in stoves and boilers is a much disputed one, although the majority of operators in

FINDING new uses for blast furnace gas affords a means of establishing a higher credit against pig iron production charges. Cost of cleaning and profitable disposal of the gas are discussed in the accompanying paper which was presented at the national iron and steel meeting of the American Society of Mechanical Engineers, Chicago, Sept. 24-26. The authors, W. A. Haven and C. B. Thorne, are vice president and assistant engineer, respectively, Arthur G. McKee & Co., Cleveland.

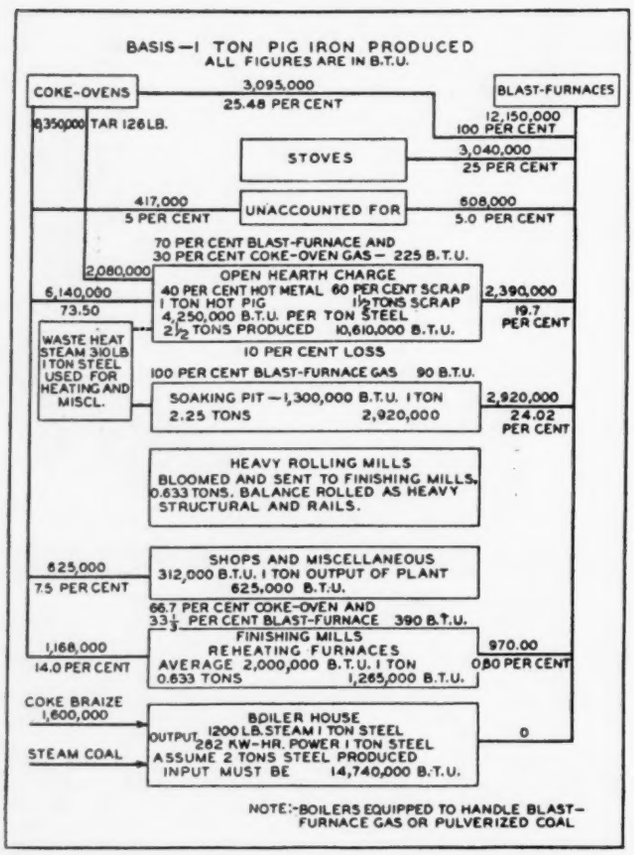


*CHART showing the distribution of by-product gases incident to the production of a ton of basic pig iron at a blast furnace and coke plant operated in conjunction with an open-hearth steelworks and rolling mill*

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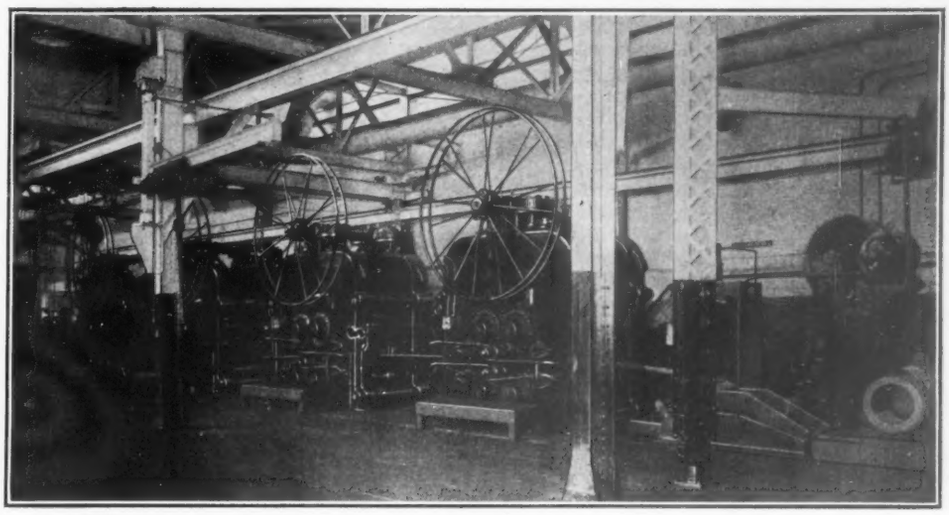

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No. 576

this country would probably desire gas for these purposes having not to exceed 0.2 grains per cubic foot. Until recently it was generally considered that the expense of cleaning finer than this was not justified except for gas-engine use.

Assuming that 25 per cent of the total gas produced is used in the stoves, Table II will show that the cost of washing gas for stoves to 0.15 grain per cubic foot amounts to 1.179 cents for each ton of pig iron produced, and for final cleaning of this much gas the charge will be 5.455 cents per ton of pig iron. In other words, it costs 4.276 cents more per ton of pig iron to use final cleaned gas than it does to use rough-washed gas. Whether savings will accrue from the use of final-cleaned gas in the stoves which will justify this additional expense is debatable. The cleaner gas makes for better operating conditions by the elimination of sludge in the mains and burners, but except for these features satisfactory operation and a high degee of stove efficiency have been obtained with gas of moderate cleanliness.

### Power Is Conserved

If rough-washed gas is to be used, a primary cleaner of the two-stage McKee type will supply gas of greater cleanliness than ordinary tower washers, and at the same time reduce the load on the secondary cleaners with a consequent saving in power as compared with that which would be necessary were only tower washers used for primary cleaning of the gas.

In Table III no attempt has been made to evaluate the fuel economies which may attend the substitution of blast-furnace gas for other fuels. In the application of mixed gases to open-hearth practice this fact is of great importance. Remarkable reductions in fuel consumption are said to have followed this innovation at several plants.

The item designated as "Cost of coal fired" (Item 2), represents the delivered cost of coal plus 50 cents per ton of coal for boiler-house expense in the case of steam coal or plus $1.47 per ton conversion charges in the case of producer coal. The latter charge is made up of operating expense or cost above coal, estimated at $1.255 and $0.215 for interest and depreciation charges. The latter are taken at 13 per cent on an investment of $29,000 for each producer of 4000 pounds coal per hour capacity.

Item 6 is an estimate of interest, depreciation, and operating charges on the distribution system which will include gas mains, gas holders, boosting equipment, mixing devices, etc. The rate is at 13 per cent for interest and depreciation plus 2 per cent for operating expense on an investment which is taken at $17,850 per thousand cubic feet per minute capacity. It also includes a charge for boosting the gas pressure after washing of 0.0256 cent per thousand cubic feet.

### Provides Uniform Heating

In the modern combination regenerative-type coke ovens it is asserted that the longer and less-intensive flame of blast-furnace gas will accomplish more uniform heating of the oven walls. Furnace men using coke from such ovens have testified

**Table I**

## Production and Distribution of By-Product Gases

| | B.t.u. content | —Percentage of total B.t.u. in— Coal | Coke-oven gas | Coke | Blast-furnace gas |
|---|---|---|---|---|---|
| Coal charged in ovens | 37,950,000 | 100.0 | ..... | ..... | ..... |
| Coke charged in blast furnace | 23,100,000 | 60.8 | ..... | ..... | ..... |
| Tar at 9 gal. per ton | 2,080,000 | 5.5 | ..... | ..... | ..... |
| Motor benzol at 2.5 gal. per ton | 338,000 | 0.9 | ..... | ..... | ..... |
| Coke-oven gas at 11,000 cu. ft. per ton | 1,600,000 | 22.0 | 100 | ..... | ..... |
| Domestic coke | 1,600,000 | 4.2 | ..... | ..... | ..... |
| Coke breeze | 1,600,000 | 4.2 | ..... | ..... | ..... |
| Unaccounted for losses | 882,000 | 2.4 | ..... | ..... | ..... |
| Blast-furnace gas | 12,153,000 | ..... | ..... | 52.5 | 100.00 |
| Blast-furnace gas to underfire coke ovens | 3,095,000 | ..... | ..... | 13.4 | 24.48 |
| Blast-furnace gas to stoves | 3,040,000 | ..... | ..... | 13.2 | 25.00 |
| Unaccounted for coke-oven gas | 417,000 | 1.1 | 5.00 | ..... | ..... |
| Unaccounted for blast-furnace gas | 608,000 | ..... | ..... | 2.6 | 5.00 |
| Coke-oven gas left for open hearth | 6,140,000 | 16.2 | 73.50 | ..... | ..... |
| Blast-furnace gas to open hearth | 2,390,000 | ..... | ..... | 10.3 | 19.70 |
| Coke-oven gas to shops and misc | 625,000 | 1.6 | 7.50 | ..... | ..... |
| Blast-furnace gas to soaking pits | 2,920,000 | ..... | ..... | 12.6 | 24.02 |
| Coke-oven gas to finishing mills | 1,168,000 | 3.1 | 14.00 | ..... | ..... |
| Blast-furnace gas to finishing mills | 97,000 | ..... | ..... | 0.4 | 0.80 |

**Table II**

## Cost of Cleaning Blast-Furnace Gas

| | Tower washer | Two-stage McKee | Feld McKee | Disintegrator | Wet Cottrell | Disintegrator plus tower | Wet Cottrell plus tower |
|---|---|---|---|---|---|---|---|
| Cleanliness expected, grains per cu. ft. | 0.3 | 0.15 | 0.10 | 0.008 | 0.008 | 0.008 | 0.008 |
| No. units and capacity in cu. ft. per min. | 1–75,000 | 1–75,000 | 1–75,000 | 1–30,000 | 1–40,000 | | |
| Investment costs | | | | | | | |
| (*a*) Cost complete | $50,000 | $50,000 | $70,000 | $30,000 | $55,000 | | |
| (*b*) Int. and dep. on above per day at 13 per cent | $17.80 | $17.80 | $24.90 | $10.70 | $19.60 | | |
| Cost per 1000 cu. ft., cents | 0.0165 | 0.0165 | 0.0231 | 0.0248 | 0.034 | 0.0413 | 0.0505 |
| Cost per ton pig iron (135,000 cu. ft. per ton), cents | 2.23 | 2.23 | 3.11 | 3.34 | 4.59 | 5.58 | 6.82 |
| Operating costs | | | | | | | |
| (*a*) Water, gallons per minute | 1665 | 1500 | 1250 | 250 | 70 | | |
| (*b*) Power to run (no boosting), kw | 0 | 37 | 90 | 200 | 20 | | |
| (*c*) Power required to pump water, kw | 62 | 54 | 45 | 5 | 1.25 | | |
| Total, kw | 62 | 91 | 135 | 205 | 21.25 | | |
| (*d*) Cost per day at 0.8 cent per kw-hr | $11.90 | $17.47 | $25.90 | $39.40 | $4.08 | | |
| (*e*) Cost per day—lubricants | 0.20 | 0.22 | 0.66 | 0.33 | 0.05 | | |
| (*f*) Cost per day—attendance | 1.00 | 1.00 | 2.00 | 4.00 | 2.00 | | |
| (*g*) Cost per day—repairs and maintenance | 1.00 | 1.00 | 2.74 | 2.00 | 1.00 | | |
| Total (items *d-e-f-g*) | $14.10 | $19.69 | $31.30 | $45.73 | $7.13 | | |
| Overhead 10 per cent on items (*e-f-g*) | 0.22 | 0.22 | 0.54 | 0.63 | 0.31 | | |
| Total operating cost | $14.32 | $19.91 | $31.84 | $46.36 | $7.44 | | |
| Cost per 1000 cu. ft. gas—cents | 0.0133 | 0.0184 | 0.0295 | 0.107 | 0.0129 | 0.1203 | 0.0262 |
| Cost per ton pig, cents | 1.794 | 2.484 | 3.98 | 14.45 | 1.741 | 16.24 | 3.535 |
| Total cost—operating plus investment | | | | | | | |
| Cost per 1000 cu. ft., cents | 0.0298 | 0.0349 | 0.0526 | 0.132 | 0.0469 | 0.1618 | 0.0767 |
| Cost per ton pig, cents | 4.02 | 4.714 | 7.08 | 17.80 | 6.33 | 21.82 | 10.35 |

**Table III**

## Comparison of Cleaning and Distribution Expenses of Gas and Coal

| Purpose for which gas is used | | (1) Cost of coal Dollars per ton | (2) Cost of coal fired Dollars per ton | (3) Gross value gas before cleaning and distribution Cents per M. cu. ft. | (4) Cost of cleaning and distribution: Primary cleaning 0.15 grain per cu. ft. Cents per M. cu. ft. | (5) Final cleaning 0.008 grain per cu. ft. Cents per M. cu. ft. | (6) Distribution including boosting Cents per M. cu. ft. | (7) Total Cents per M. cu. ft. | (8) Net comparative value after deduction of cleaning and distribution expenses Cents per M. cu. ft. |
|---|---|---|---|---|---|---|---|---|---|
| Primary washed gas as substitute for steam coal of 13,000 B.t.u. value | 289,000 cu. ft. blast-furnace gas, 90 B.t.u. = 1 ton coal | 2.50 | 3.00 | 1.039 | 0.0349 | .... | .... | 0.0349 | 1.004 |
| | | 3.50 | 4.00 | 1.384 | 0.0349 | .... | .... | 0.0349 | 1.349 |
| | | 4.50 | 5.00 | 1.729 | 0.0349 | .... | .... | 0.0349 | 1.694 |
| Final cleaned gas as substitute for steam coal of 13,000 B.t.u. value | 289,000 cu. ft. blast-furnace gas, 90 B.t.u. = 1 ton coal fired | 2.50 | 3.00 | 1.039 | .... | 0.1618 | .... | 0.1618 | 0.877 |
| | | 3.50 | 4.00 | 1.384 | .... | 0.1618 | .... | 0.1618 | 1.222 |
| | | 4.50 | 5.00 | 1.729 | .... | 0.1618 | .... | 0.1618 | 1.567 |
| Final cleaned gas as substitute for producer gas. Gas coal at 13,500 B.t.u. | 255,000 cu. ft. blast-furnace gas, 90 B.t.u. = 1 ton coal fired | 3.00 | 4.47 | 1.753 | .... | 0.1618 | 0.536 | 0.6978 | 1.055 |
| | | 4.00 | 5.47 | 2.140 | .... | 0.1618 | 0.536 | 0.6978 | 1.442 |
| | | 5.00 | 6.47 | 2.537 | .... | 0.1618 | 0.536 | 0.6978 | 1.839 |
| Final cleaned gas as substitute for coke-oven gas | 6 cu. ft. blast-furnace gas = 1 cu. ft. of coke-oven gas at 540 B.t.u. | CO gas at $0.10 per M. cu. ft. | | 1.667 | 0.1618 | 0.536 | 0.6978 | 0.970 | |
| | | CO gas at $0.20 per M. cu. ft. | | 3.333 | 0.1618 | 0.536 | 0.6978 | 2.630 | |
| | | CO gas at $0.30 per M. cu. ft. | | 5.000 | 0.1618 | 0.536 | 0.6978 | 4.303 | |

to its excellent quality. Straight blast-furnace gas also has been used as a direct substitute for producer gas in soaking-pit furnaces. It obviously is suitable for direct use in box annealing furnaces or other types of furnaces where comparatively low temperatures are sufficient.

Remarkably good results have been obtained by both methods, not only in fuel consumption but in tonnage output, quality of steel, and life of refractories. Less than 5,000,000 B.t.u. per ton of steel has been accomplished consistently. The thermal value of the gas may be varied more or less, but generally averages about 225 B.t.u. per cubic feet, corresponding approximately to a mixture of 30 per cent coke-oven gas and 70 per cent blast-furnace gas.

It is safe to predict that in many American plants where surplus blast-furnace gas now is being used exclusively in boilers, a careful study of all the conditions will reveal that it can be applied in a large measure to other purposes with a substantial return upon the investment required for making the change.

## Welded Bridge Pedestals Withstand Standard Tests

Tests of welded steel bridge pedestals, used to transmit the bridge load to the piers, conducted by the bureau of standards, Washington, have brought out that this new type of pedestals was amply strong to withstand the loads for which it is designed. Nearly all steel bridges are supported on pedestals which distribute the highly concentrated pressures at the top of the pedestals over larger areas at the base so that safe bearing pressures are not exceeded on the masonry or concrete piers. These pedestals are usually castings and while they can be used with safety, their manufacture requires the use of expensive patterns and considerable time for labor.

The increasing use of welding for structural fabrication prompted the American Bridge Co., New York, to make designs for welded steel pedestals and because they represented a rather radical departure from present practice, the company requested the bureau of standards to conduct tests on samples in the 10,000,000-pound testing machine to determine their safety and also to study the stress distribution so that the most efficient design might be used. Measurements with the strain gage, designed by H. L. Whittemore of the bureau, while the pedestals were under load in the tesing machine showed which design gave a most uniform stress distribution.

# Prepares Recommendations for Building Coke Plant in Chicago District

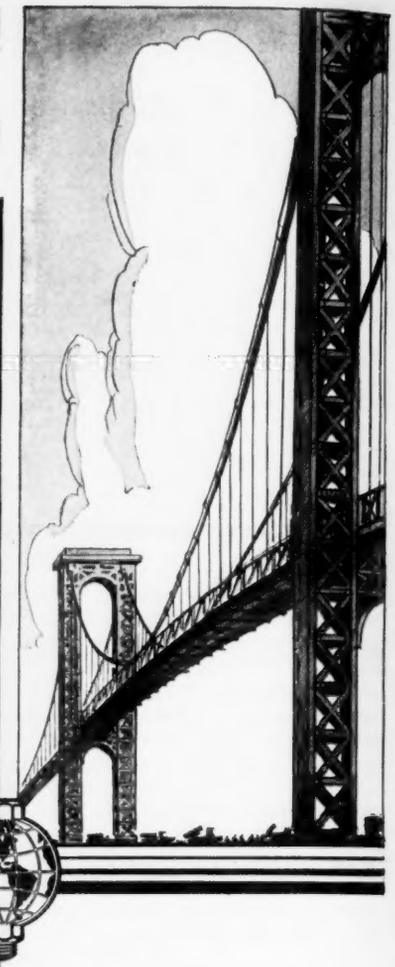
ESTABLISHMENT of a complete modern by-product coke plant in connection with a blast furnace unit was the subject of an all-day discussion Tuesday, Nov. 25, at the Hotel Windemere, Chicago, by the Chicago District Blast Furnace and Coke association. The theoretical coke plant was developed to accompany the model blast furnace plant "erected" on paper at a meeting of the association last April. Findings and minutes of the meeting will be printed and made available to the industry.

The idea was to present a complete account of the building, equipment and adaptation of a modern coke plant in the Chicago district, particularly for the present, and to meet the needs coincident with the theoretical blast furnace plant. The view was not to recommend any particular equipment, but rather types. For certain needs the relative merits of several types of equipment were presented, so that conclusions could be drawn in accordance with suggested advantages.

L. B. Robertson, superintendent of the coke plant, Wisconsin Steel Co., gave a resume of the art and science of cokemaking and development of equipment. E. J. Gardner, superintendent of the coke plant, Inland Steel Co., spoke on coke oven construction, reviewing various types and making suggestions as to what might prove most advantageous for the outlined needs. C. L. Wagner, superintendent of coke plants, Interlake Iron Corp., discussed the handling of coal and coke from the ovens and conveyors to screens and loading or storage. George Wardley, superintendent of the coke plant, Joliet works, Illinois Steel Co., spoke on dry quenching. George Williams, superintendent of the coke department, Iroquois plant, Youngstown Sheet & Tube Co., Indiana Harbor works, outlined processes in by-products recovery.

Following the presentation of the papers and a luncheon, a full discussion of the subjects was held and recommendations and suggestions prepared. Officers elected by the association were: President, J. P. Fagan, Interlake Iron Corp., Chicago; vice president, W. C. McKee, general superintendent, Federal furnace plant, Interlake Iron Corp.; and secretary-treasurer, E. J. Gardner, Indiana Harbor works, Inland Steel Co. Minutes of the meeting may be obtained shortly from Mr. Gardner.

# SAFE



It is safe to specify either "Pittsburgh" or "Gary", Bolts, Nuts and Rivets, for these famous products are made of the kind of steel and the kind of workmanship that inspire confidence among America's most responsible engineers and builders of buildings, ships, bridges, machinery, etc.

In our four great plants at Pittsburgh, Gary and Chicago, we have also the most complete facilities in the country for producing special forged rods and bolts for foundation, bridges, dock, dam or general construction requirements.

Let us serve you.

**PITTSBURGH SCREW AND BOLT CORP.**
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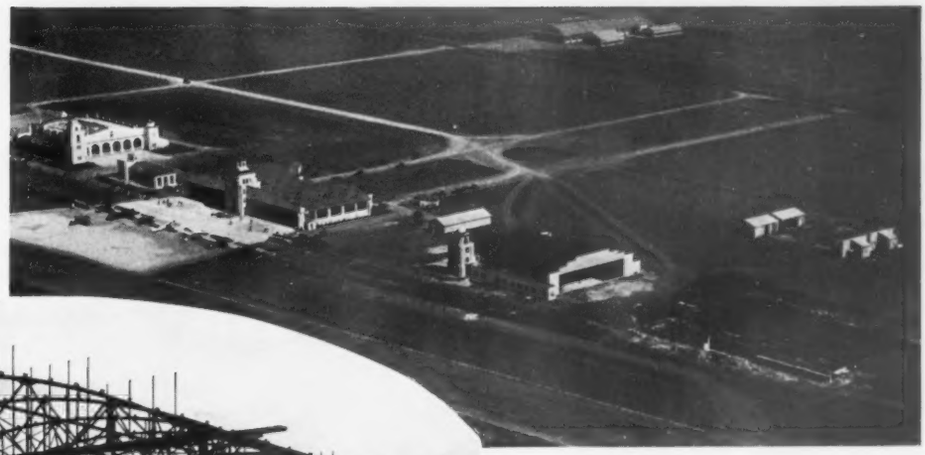
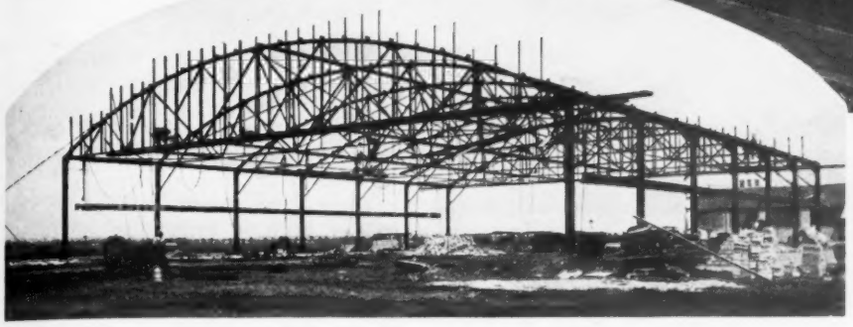
Plants: Continental Works, Chicago — Gary Works, Gary, Ind.
Pittsburgh Works, Pittsburgh — Graham Bolt & Nut Works, Pittsburgh
Sales Offices: Peoples Gas Building, Chicago — 250 Park Avenue, New York

*GROUP of steel-framed buildings and hangars at the municipal airport, Los Angeles, shown at the right. The steel framework of the partially completed hangar at the extreme right is shown in greater detail below*





# Steel Is Accepted Material for Hangar Construction

BY K. B. LANSDOWNE

THE steel hangar in aviation has assumed definitely a major status in the industry, and this holds true for all sizes and types of hangars to a point where the problem of design only remains to be settled. The importance of what has been done, so far as the steel industry is concerned, scarcely can be exaggerated.

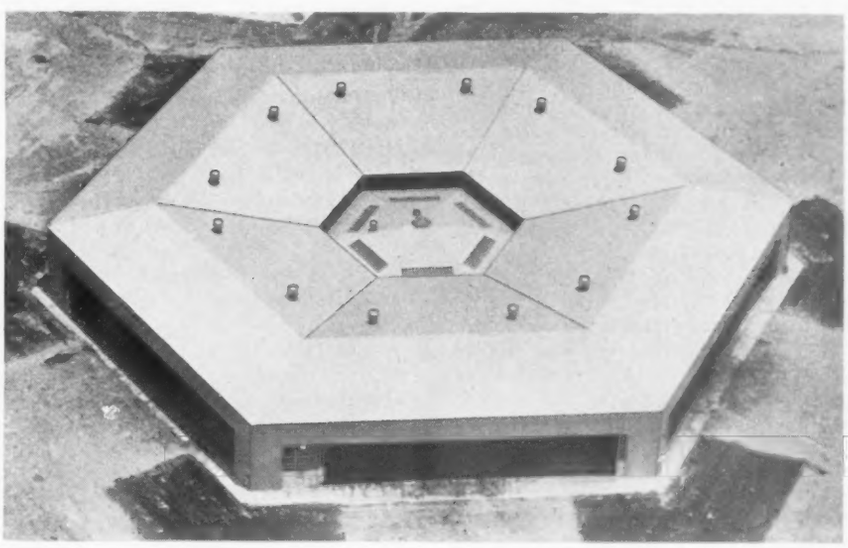
In all parts of the country, the steel hangar has become the standard after five years of experimentation, which has seen practically every structural material given at least a trial. From the giant Goodyear-Zeppelin hangar at Akron, O., to the Western Air Express hangars at Los Angeles, the sole remaining problems are definitely in the design field, not in the material.

The principal problem in design is one of neutralizing or avoiding wind pressures while placing aircraft, both dirigibles and planes, in their stowage places. It is desired, almost mandatory in fact, that aircraft of all kinds be hangared against the wind, that is, craft should be brought into hangars against wind flow. Ordinarily dirigible hangars develop great wind stresses about the doors, when the doors are open. The same difficulty is met in airplane hangars, and while extremely small craft which can be handled by one or two men may safely be berthed, large ships, requiring mechanical ponies to haul them about, may be upset easily or knocked about by wind pressures.

Consequently, the major part of the engineering experimentation for the Goodyear-Zeppelin hangar consisted of devising methods for offsetting wind pressures. The same held true for the design of the Western Air Express hexagonal hangar, shown in accompanying illustrations. In the Goodyear-Zeppelin hangar, the design problem revolved about the door design. In the west coast hangar, the problem was solved by a hexagonal design which could be entered from any direction, according to the direction of the wind. Thus two large organizations solve the design problem, or attempt to solve it. Both represent an advance in hangar engineering, and doubtless further advances will be made as time goes on. Both the aforementioned hangars have recourse to steel construction, steel roofings, steel sides and structural steel skeletons.

The trend of design also can be seen in the system of hangars designed for the municipal airport of the city of Los Angeles. The municipal hangarage on the field is steel roofed and steel sided, with structural steel skeletons. End faces, for decorative reasons, are of brick.

Underwriters have had an important influence on steel construction, in that they have determined ex-



*This hexagonal hangar, of steel construction, was designed to permit entrance of a ship from a direction favorable with the wind. The structure is at the terminal of the Western Air Express, Los Angeles*

*A maze of steel roof trusses is seen in this view of the hexagonal Western Air Express hangar before completion of the building*

tremely favorable fire rates for the steel hangar, in fact so much so that the reasonable board of control could hardly fail to authorize steel construction. In the case of the Goodyear hangar fire underwriters dictated the roof material entirely in a preliminary conference. They showed where actual economies in construction also could be effected, so that it actually paid the Goodyear organization in dollars and cents to use steel.

Present trends in hangar and dock construction can have but one result, and that is a countrywide system of steel hangarage of both large and small capacities. Furthermore, it has been demonstrated that steel lends itself not only to financial economy, but to engineering facility to such an extent that architects prefer to work with it.

## Proper Equipment Essential to Successful Nitriding

(*Concluded from Page* 50)

creased tremendously in the past year; this growth is represented not only in the smaller forgings, but the larger ones as well. Forgings weighing 100 pounds were considered large one year ago; today, the weights run in thousands of pounds.

Possible uses of the nitrided steels are limited only by the boldness of the designer and the vividness of his imagination. Whether or not the application to a particular service is practicable can be determined only after a thorough engineering discussion. Even this discussion may not clear all minds of doubt; in which event, an actual trial or trials in service are well worth making, for, if the steel is a success, it is a *big* success and any hesitancy or any condemnation of the process, on account of its newness, is not warranted, in view of the possible or probable gains. It does no follow that every machinery part that wears out should be replaced by a nitrided steel, for limitations still remain; just where the limit is, however, has yet to be determined.

In the commercial application of the nitriding process a number of pertinent questions arise as to the how and why of various steps in the operation. The writer, from his wide experience and extensive experimentation with nitriding, has answered a number of these queries. His remarks, throwing much practical light on the subject, are presented elsewhere in this article.

## Announces Fellowship in Electrochemistry

Graduates of colleges, universities or other technical institutions, showing marked capacity for research in electrochemistry, and under 30 years of age, are eligible for the Weston fellowship in electrochemistry, valued at $1000 and sponsored by the Electrochemical society.

The award will be made without distinction as to sex, citizenship, race or residence and will have a term of one year, continuation of the award to the fellow receiving it resting with the board of directors of the society.

The successful candidate may carry out the research at any institution approved by the board. Applications for the fellowship for the academic year Oct. 1, 1931, to June 1, 1932, must be received by the secretary of the society before March 1, 1931. Forms for application are available from Colin G. Fink, secretary, the Electrochemical society, Columbia university, New York.

## Ferrosilicon Speeds Silica Formation in Steel

Research engineers of the bureau of standards, Washington, recently determined that if additions of large amounts of metallic silicon in the form of ferrosilicon are made to molten steel which is in an oxidized state, the iron oxide is reduced with the result that silica is formed rapidly. This apparently causes a short "filming-over time" with the customary spoon test used by melters to determine the fluidity or "runability" of molten steel. Four heats of acid electric steel for castings, in which two heats were in the "over-reduced" state while the others were in the normal condition as made according to general practice were used.

When steel is in this state, the melter may be unable to judge its temperature correctly because its surface will radiate more heat and it will appear brighter than a clean liquid steel surface. It is possible that the silicate films formed in over-reduced steels may act as a skin or membrane to retard the free flow of the liquid steel in sand molds. Steel that has been strongly reduced with silicon so as to give poor "runability" in molds can be corrected by the addition of iron oxide in the form of ore, rusty scrap or mill scale.

## Sponsors Service To Aid Designers, Inventors

The industrial development department of the Cleveland chamber of commerce announces the establishment of a new service through which inventors and designers may submit their inventions or ideas to the inspection of over 2000 manufacturers. Descriptions of newly designed devices may be submitted to the industrial development department which compiles the information in a letter, mailed to a list of industrial plants which might be interested. Further details are available from the department, 1704 Terminal Tower, Cleveland.

## Electrochemists To Meet in Birmingham April 23-25

The Electrochemical society will hold its spring meeting at Hotel Tutwiler, Birmingham, Ala., April 23-25, 1931. The principal technical session will be devoted to "Electrochemistry and Ceramics," and a number of authors have promised papers on this subject. Other topics to be discussed will be "Electronics," with special emphasis on the electrochemistry of the vacuum tube and the photoelectric cell, and "Electrodeposition of the Noble Metals."

# Japan Seeking Recognition in Steel Production

BY G. H. AUPPERL

STEEL producing capacity in Japan has increased almost 20 times since 1907 and in bringing about this remarkable expansion, several of the leading plants engaged American and German consultants. The accompanying article, describing recent progress, was written by G. H. Aupperl, international authority on rolls, who for the past two years served as consulting metallurgist for the Tobatta Foundry Co., Tokyo. The illustration was furnished through the courtesy of H. A. Shutt, chief foreign engineer, rolling mill division, Kawasaki Dockyard Co., Kobe.

JAPAN, famous for its cherry blossoms and Geisha girls, is striving hard to add a third celebrity in the manufacture of iron and steel. To help it acquire this recognition as quickly as possible the three leading steel plants and the most important foundry for the past few years have employed leading American and German engineers and metallurgists to teach them the art. About 60 per cent of the equipment in these plants was manufactured in America and the balance was imported from Germany.

Japan now is consuming about 2,550,000 metric tons of steel annually and is exporting more than 200,000 tons. This shows an increase in demand of five and one-half times that of 1907, while during the same period manufacturing capacity has increased almost 20 times.

The two principal steel plants produce about 1,800,000 metric tons of ingots and castings annually. One of these plants, the Imperial Steel works, is owned and operated by the Japanese government and is located at Yawata, Fukuoka Ken. Kyusku, under the management of Reisaku Nakai. This plant, which annually produces more than 1,000,000 tons of steel ingots, or about 60 per cent of the total output of the empire, was established 1897 at Yawata, a city of 150,000 inhabitants located about 2 miles from the Japan sea with which it is connected by the Wakamatsu bay.

The total investment of the government in this plant is more than 130,000,000 yen, or about $64,000,000 gold. It employs 18,000 workers and its by-products alone are valued at nearly $3,000,000 gold yearly. It owns and operates a number of coal mines producing about 1,300,000 tons of coal annually. Its nine blast furnaces have an annual capacity of 1,000,000 tons. Steelmaking equipment consists of 46 open-hearth furnaces of 1,335,300 tons capacity. The 37 stands of rolls have a capacity of 1,059,800 tons of finished products. Coke ovens number 525 with capacity of 1,052,600 tons.

The following table gives the annual production in metric tons of pig iron, steel and coke of the Imperial plant during the past three years:

| | 1927 | 1928 | 1929 |
|---|---|---|---|
| Pig iron ..... | 734,800 | 831,800 | 781,000 |
| Steel ingots.. | 1,056,600 | 1,164,300 | 1,325,200 |
| Steel bars .... | 830,000 | 937,200 | 1,059,800 |
| Coke ..... | 859,800 | 903,800 | 952,600 |

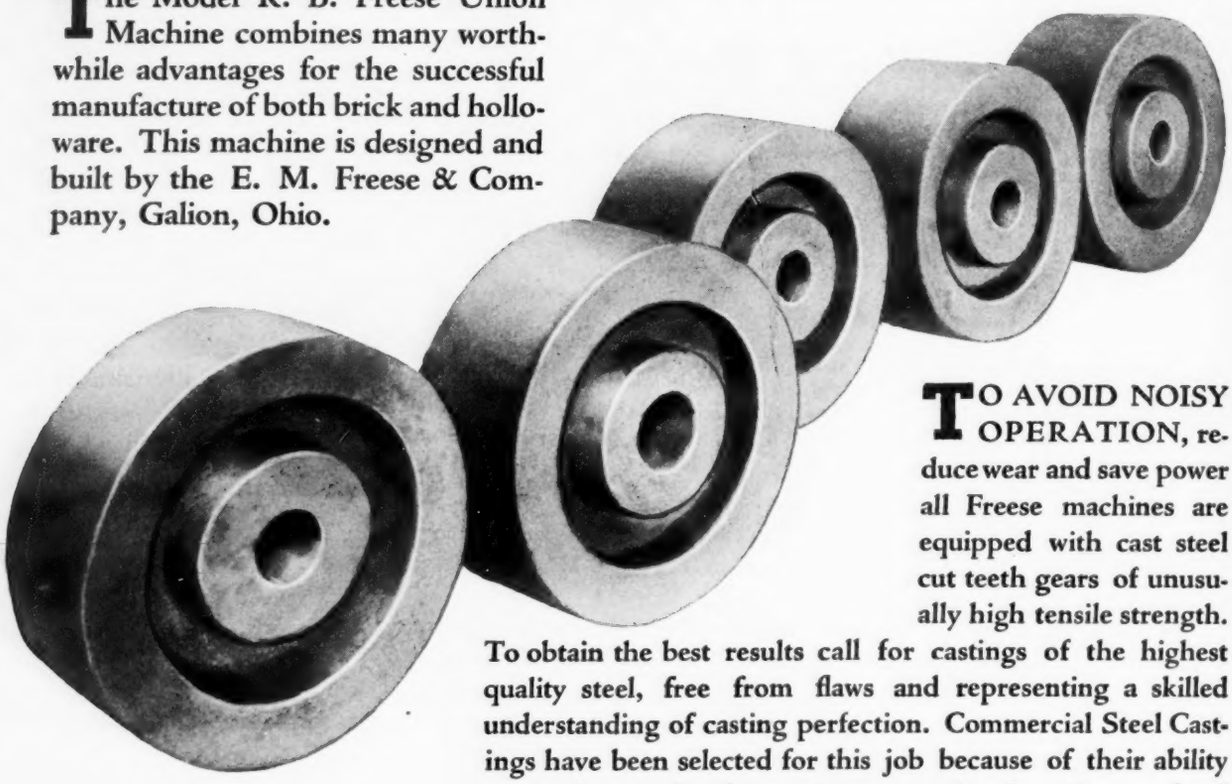
Principal finished products are rails, angles, U bars, T bars, rounds, cables, plates, black sheets, tin plate, rivets, and axles. The bulk of raw materials is imported, natural resources being very scarce. Iron and manganese ores come from Chosen, Yangtse valley of China, and India. Some of the mill rolls are made in the roll foundry and others are imported from America, Germany and France. The Tobatta Foundry Co., one of the Japanese roll makers, fur-

*Religious ceremonies play an important part in the dedication of new plants or equipment in Japan. This interesting illustration shows the group which participated in the dedication of one of the sheet mill units at the Fukiai works of the Kawasaki Dockyard Co., Kobe*

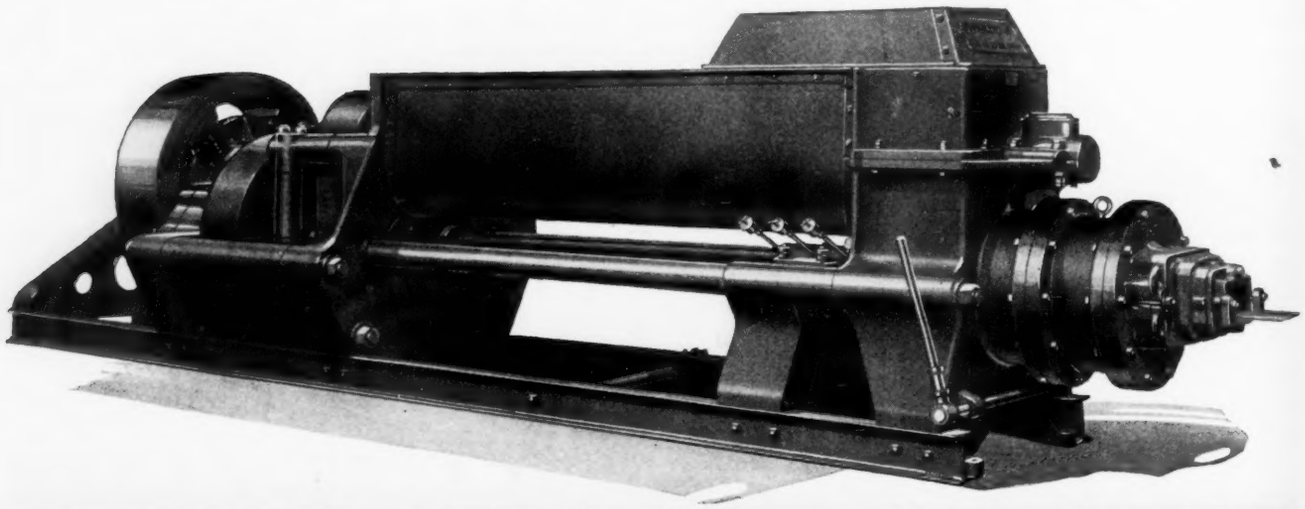
# FREESE UNION MACHINE

## *Castings by* COMMERCIAL

The Model K. B. Freese Union Machine combines many worthwhile advantages for the successful manufacture of both brick and hollowware. This machine is designed and built by the E. M. Freese & Company, Galion, Ohio.



TO AVOID NOISY OPERATION, reduce wear and save power all Freese machines are equipped with cast steel cut teeth gears of unusually high tensile strength. To obtain the best results call for castings of the highest quality steel, free from flaws and representing a skilled understanding of casting perfection. Commercial Steel Castings have been selected for this job because of their ability to stand up under the most severe strain of continuous, hard service — the finest, sturdiest castings money can buy.



## THE COMMERCIAL STEEL CASTING CO.

*Subsidiary of The Osgood Company*

MARION, OHIO

*Sales Offices*

416 First National Bank Bldg. Cincinnati, Ohio

1002 Tribune Bldg. New York City

1623 Conway Bldg. Chicago, Ill.

Fisher Bldg. Detroit, Mich.

620 National Bldg. Cleveland, Ohio

nishes many chilled and sand rolls also.

Another of the large Japanese steel plants is the Fukiai works of the Kawasaki Dockyard Co., located in the eastern section of Kobe. The first unit consisted of a plate mill which started operations in July, 1918, while the European war still was in progress and was used principally for the company's own requirements of steel plates in the marine boiler and locomotive division. Plates ¼-inch and thicker are rolled at this mill which has a capacity of 100,000 tons annually.

The first unit of the sheet mills went into operation in June, 1924, including three finishing and three roughing mills and two stands of cold rolls with a capacity of 20,000 tons of sheets varying from 11 to 30½ gage inclusive, the latter comprising about 80 per cent of the output. Owing to the increasing demand for steel sheets it was found necessary to add new units until in December, 1928, 25 stands were operating with an annual capacity of 200,000 metric tons. A small tonnage of sheet bars is made from plates from the plate mill and the balance of the requirements is imported from the United States, Germany and Belgium. To insure a more uniform quality and at the same time minimize the cost of production it was decided to install a sheet bar mill. This was purchased from Germany and began rolling in May, 1929, and since then the tonnage of imported sheet bars has diminished greatly. Last year imports of steel bars represented less than 30 per cent of consumption.

### Operate Three Companies

The Kawasaki Dockyard Co. Ltd., which controls the Fukiai works, was founded in 1886 and was incorporated into a limited liability company in 1906 with a capital of 2,000,000 yen, or about $99,500 gold, and this since has been increased to 90,000,000 yen. The company controls three distinct undertakings, a shipbuilding and engineering works, aviation works and the plate and sheet mills, while it operates the Kawasaki Locomotive & Car Co. and Kawasaki Steamship Co. as subsidiaries.

Religious ceremonies play an important part in the dedication of new plants or equipment in Japan. The rites usually consist of the placing of salt on each piece of new machinery and as it begins to function, salt and sometimes rice is thrown on the equipment. In 1929, the writer was invited to attend the launching of a 6000-ton steamship in Kyushu and as it was sliding down the ways two Buddhist priests continued to throw salt at it while during the ceremony the officials of the shipyard threw thousands of small cakes made of rice to the spectators. This is a very old custom in Japan and although salt retails for about 26 cents gold per pound, it is used even in the homes when any new equipment, such as stoves, pumps, etc., are installed. Because of their long standing the religious ceremonies are of considerable value in instilling confidence in the workers.

An accompanying photograph shows the gathering at the dedication of one of the sheet mill units of the Kawasaki works. Operation of new equipment invariably is commenced on Sunday, a day considered the luckiest one of the week.

# Here and There in Industry

(*Concluded from Page* 31)

**new type of automatic pumps for shallow and deep wells.**

□ □ □

Western Steel & Equipment Corp., Portland, Oreg., has occupied its new office and warehouse quarters at 94 First street, corner Stark street. The new location is in the district given over to the steel, equipment and industrial supply trade.

□ □ □

**Cutler-Hammer Inc., Milwaukee, has been given an order for lifting magnets by the Illinois Steel Co., Chicago, valued at $308,000. The order calls for eight 65-inch and one 55-inch magnets. The 65-inch units are capable of exerting a lifting force of 60,000 pounds.**

□ □ □

**Follansbee Bros. Co., Pittsburgh, has consolidated the offices of its plant at Follansbee, W. Va., and Toronto, O., at Follansbee, moving the personnel there. Gilbert Follansbee, formerly general manager at Toronto, has been made general manager of both plants.**

□ □ □

Buffalo Housewrecking & Salvaging Co., Buffalo, has begun demolishing the Sizer Forge Co. plant at Buffalo. The plant was erected during the war for the production of large steel shafting and cost $1,000,000. The company entered bankruptcy after the war.

□ □ □

National Pfanstiehl Radio Co., Waukegan, Ill., organized to manufacture radio receivers and accessories, has leased 10,000 square feet of floor space in the Garrett Wilson Inc. building on Genesse street, Waukegan. Manufacturing operations will start shortly.

□ □ □

Jones & Laughlin Steel Corp., Pittsburgh, is adding a new unit to its steel warehouse at 2250 West Forty-seventh street, Chicago. The structure will be 1-story, 102 x 494, of all-steel construction. The building will be largely for storage. Maher & McGrew, Evanston, Ill., are architects.

□ □ □

Addressograph-Multigraph Corp. is the name approved by stockholders of the American Multigraph Co., Cleveland, and the Addressograph International Co., Chicago, for the proposed merger of these companies, which was also approved. Stockholders of the latter will meet Dec. 12 to vote on an increase of capital from $750,000 to $1,000,000.

□ □ □

Modern Pouring Devices Co., Port Washington, Wis., has changed its name to Modern Equipment Co. The concern was formed to manufacture foundry equipment but in recent years has enlarged its line of products beyond the needs of foundries. The building program laid out a year ago has been delayed by business conditions but plans are being made to start initial work without delay.

□ □ □

Jensen Machine Works, Sawyer, Wis., a suburb of Sturgeon Bay, Wis., has taken over manufacturing rights to a new type of mechanical stoker designed by Joseph Wasserlich, formerly connected with a large foundry and machine concern at Algoma, Wis. The new stoker differs from the standard type in that the worm gearing and the fire grates are removable in sections to permit ready replacement.

□ □ □

Inca Mfg. Co., a division of the National Electric Products Corp., New York, which, in turn, is a subsidiary of Phelps-Dodge Corp., New York, has moved to larger quarters at 1547 Venice boulevard, Los Angeles, having purchased the S. & L. Mfg. Co. The plant has 20,000 square feet of floor space, manufacturing choke coils and other parts for radio manufacture. D. W. Smith is local manager.

□ □ □

Allis-Chalmers Mfg. Co., Milwaukee, has booked two orders for sugar cane harvesting machines amounting to approximately $350,000. Fourteen machines are to be built for the Southern Sugar Co. of Florida and six for the Punte Alegre Co. of Cuba. The machines are constructed on designs by the sugar concerns, and if successful, it is expected that a regular production schedule can be instituted in the Milwaukee works.

□ □ □

A recent issue carried a news item regarding the acquisition of the stock and good will of the sheet metal division of the Richards Co. Inc., Boston, by Joseph T. Ryerson & Son Inc., Chicago. In this article it was mentioned that in 1926 the Ryerson company entered the Boston territory through the purchase of the Penn Metal Co. This is in error, as the Ryerson company purchased only the reinforcing bar division of the Penn Metal Co.

# New Books Worth Reading

SCIENCE ◆ ECONOMICS ◆ BUSINESS

## How Impurities Affect Properties of Metals

*Impurities in Metals*, by Colin J. Smithells; cloth; 190 pages, 6 x 9¾ inches; published by John Wiley & Sons Inc., supplied by STEEL, Cleveland, for $5, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 25 shillings, postage extra.

Just what effect small quantities of foreign substances have on the properties of metals seems important and sufficient interest is taken to cause publication of the second edition of this work. Whether the effect of these impurities is beneficial or detrimental, definite knowledge is helpful and from that as a basis desired results may be worked out.

In the case of some metals the effect of small quantities of added elements on specific properties have been investigated in detail. In other cases experience has shown certain elements have definite effects for good or harm. The author prefers to group under the term minor constituents both included impurities and elements added to obtain certain results. This simplifies the study of effects. Metallic, nonmetallic and gaseous impurities are considered, with subdivision according to their solubility in the metal or alloy.

Considerable space is given to the use of X-rays in the study of metals as having a strong bearing.

The second edition has been revised thoroughly and results of researches since publication of the first have added much knowledge. The chapter on gases has been much enlarged and that on the effect of metallic constituents on mechanical properties has been entirely rewritten and considerably expanded.

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## Die Design as Worked Out in Practice

*Die Design and Diemaking Practice*, by Franklin D. Jones; fabrikoid; 921 pages 6 x 9 inches; published by the Industrial Press, New York; supplied by STEEL, Cleveland, for $6, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 30 shillings, postage extra.

Widespread use of dies in production of a large variety of sheetmetal parts brings a need for knowledge of their design and use. This volume seeks to fill this need and to supply information on the specific application of dies to many lines of manufacture. Information is presented in as compact form as possible, with illustrated descriptions of a large variety of dies approved by experienced die designers and makers.

In presenting the subject of drawing dies an unusual arrangement is used. They are grouped into chapters acording to the general classification based on shapes of parts produced. This facilitates finding a given type of die and designs for similar operations may be compared readily.

Illustrations are clear and sufficiently numerous to cover a wide variety of work.

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## Trends of Foreign Commerce Are Traced

*Trends in Foreign Trade of the United States*, cloth, 329 pages, 6 x 9 inches; published by the National Industrial Conference board, New York, and supplied by STEEL, Cleveland, for $3.50, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 17s 6d, postage added.

Many change have taken place since the World war, in commodity trading, partly due to industrial progress in various countries and partly to shifts in their relative financial positions.

This volume contains four parts. The first gives a brief review of the factors underlying changes in world trade and the significance of the new status of the United States as a creditor nation. In Part II is given an analysis in considerable detail of the major world markets for exports of the United States. This is followed in the third section by statement of our requirements for foreign products and their sources and quantities. Part IV is a correlation of these data and an exposition of trends.

This is an important contribution to the literature of American foreign trade in that it shows the changes from prewar days and sketches the tendencies and trends of commerce. It is the result of careful study and contains the best thought of a number of representative business men called to aid the Conference board in its survey, by advice and suggestion.

## British Coke Put on Definite Quality Basis

*Coke for Blast Furnaces*, by R. A. Mott and R. V. Wheeler; cloth; 260 pages, 6 x 9¾ inches; published by the Colliery Guardian Co. Ltd., London, Eng.; supplied by STEEL, Cleveland, for $6.50, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 25 shillings, postage extra.

This is the first report of the Midland coke research committee, composed mainly of representatives of coke producers and users. It is based on large-scale and laboratory tests at coke ovens and blast furnaces and research work in the department of fuel technology of Sheffield university.

It shows how various properties required in a blast furnace coke may be specified and how those properties are affected by selection and blending of the coal charge and conditions of coke making and handling. Results of the tests enable the blast furnace operator to specify required qualities and the coke manufacturer to conform to these specifications.

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## Tentative Standards by A. S. T. M. Are Published

*A. S. T. M. Tentative Standards*, paper or cloth; 864 pages, 6 x 9 inches; published by the American Society for Testing Materials; supplied by STEEL, Cleveland, for $7 in paper and $8 in cloth, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 35 shillings in paper and 40 shillings in cloth, postage extra.

The 1930 edition of this publication presents 155 tentative standards, published for the attention of whoever may be interested, for criticism and suggestion, which will be considered by the committee before the standards are finally approved.

This volume presents 12 tentative standards relating to ferrous metals, 13 to nonferrous metals, 16 to cement, lime, gypsum and clay products, 40 to preservative coatings and petroleum products, 25 to road and paving materials, 24 to rubber products, insulating and textile materials and 25 to coal and coke, shipping containers, slate and miscellaneous materials.

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# Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

## USES:

### Chain Drives

*General rules which should be followed in the application of silent chain drives, discussed by J. H. Groom, in Machine Design, November 1930, p. 32, 3¼ pp., 6 illusts.*

Large pitches are used when heavy power at comparatively slow speed is to be transmitted, and the smaller pitches for the lighter power and high speeds. If extra smooth or quiet running is desired, the smaller pitches should be favored, compensating for the power by adding width to the chain. Vertical drives should be avoided and an angle of at least 10 degrees provided. It is preferable to have the slack in the strand of chain which is at the greatest angle from the vertical. When the center line of the drive is horizontal, or at angle less than 45 degrees, the slack strand of a chain either may be the upper or preferably the lower strand. It is desirable to keep an odd number of teeth in both sprockets and an even number of links in the chain, since this combination results in long life. While pinions with as low as 13 teeth can be used, it is better to use not less than 17 teeth where the ratio and other conditions permit. The driving sprocket should be proportioned to give a chain speed of not more than 1400 feet a minute. Every drive should be designed for its own particular service. Provision should be made for the proper lubrication of the chain along automatic lines.

—STEEL 12-4-30

### Synthetic Molding Sand

*Selection of material to be used, discussed by L. B. Knight, in The Foundry, Dec. 1, p. 80, 1½ pp.*

Synthetic sand is composed of silica grains, a good fire clay bond and moisture to cause the colloids to take hold. A mechanical mixer is used to coat the grains. With the proper base sand it should be possible to get a molding sand suitable for any particular job. Moisture content is an important item to be considered in the use of synthetic sand. The range of moisture for clay-bonded, synthetic sand is between 4½ and 5½ per cent. A few specific castings jobs, in which sand of this type was used, is cited by the author.

—STEEL 12-4-30

## FABRICATION:

### Stress Determination

*Stresses due to the pressure of one elastic solid upon another as determined by Howard R. Thomas and Victor A. Hoersch presented in bulletin No. 212 issued by the engineering experiment station, University of Illinois, 54 pp., 3 tables, 4 illusts.*

The question as to what stresses are produced within the area of contact when one elastic solid is pressed against another has for a long time been recognized as one of great importance. That a solution of the question has a definite practical application may be realized when it is considered that the calculation of the stresses encountered in ball and roller bearings, bridge rollers, rolling lift bridges and wheels on rails is impossible by the common formula of mechanics. The design of such structural parts is based largely on results of tests, or trial and error methods. The bulletin contains the report of an investigation conducted to find the solution of this problem. One chapter is devoted to the mathematical method of solution and the remainder of the bulletin contains the results of the laboratory work in the verification of the mathematical analysis.

—STEEL 12-4-30

## PRODUCTION:

### Die Casting

*Physical results to be expected from present-day die casting, discussed by D. L. Colwell, in Metal Progress, November, 1930, p. 58, 7 pp., 5 illusts.*

A recent and spectacular development is the die casting of aluminum. Variations in dimension of die, of casting, and of machine parts are greater at the high temperatures involved; consequently, the accuracy secured is not as great as with metals which can be cast at lower temperatures. Three main classes of alloys are used for aluminum die castings. The oldest of these is the copper-aluminum alloys containing from 3 to 16 per cent copper. Another class contains nickel, copper and silicon in varying percentages. Silicon alloys comprise the third class. Aluminum die castings are easy to machine. Plating of these alloys is one of the newer developments. Distortion or deterioration of physical properties do not occur in these alloys.

—STEEL 12-4-30

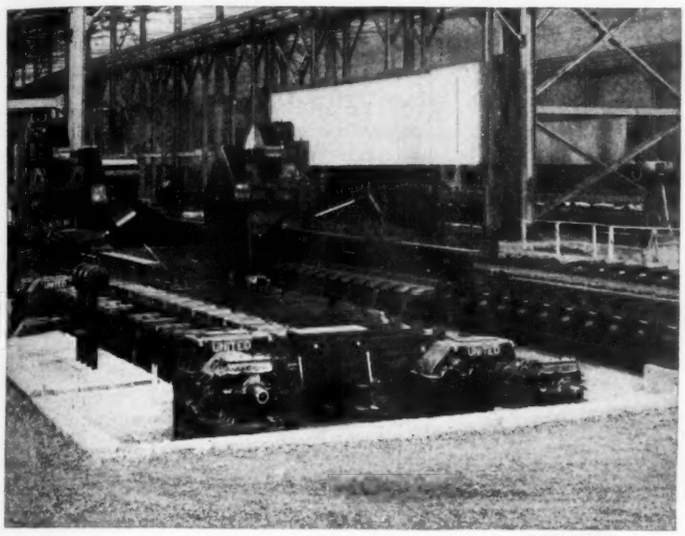
### Open-Hearth Combustion

*Various factors concerning combustion which afford economical operation of a furnace, considered by W. P. Chandler Jr., in Proceedings of the Engineers' Society of Western Pennsylvania, p. 241, 14 pp., 3 tables, 3 illusts.*

The author discusses the heat requirements of the process; the relative value of liquid fuels, producer gas, mixed blast furnace and coke oven gas, coke oven gas and natural gas; methods of increasing the flame temperature; value of preheating air and gas; furnace regulation; and, the design of ports. The author described a continuous regenerative air heater which comprises a metal regenerator operating in series with the brick checker chambers. The waste gases first pass through the brick chambers and then through the metal regenerator, while the cold air going to the furnace is heated partially in the metal regenerator before passing on through the brick checkers to the furnace. The brick checker chambers can be designed to prevent clogging with dust and with only sufficient heating surface to absorb the peak temperatures from the hot waste gases, with the metal regenerator receiving the waste gases after they have passed the brick checkers. In this way a large amount of heating surface can be made effective within a small floor space and temperatures much in excess of present air temperatures obtained.

—STEEL 12-4-30

# SOME OF THE UNITED EQUIPMENT NOW IN OPERATION IN THE NEW A. M. BYERS PLANT



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ROLLS AND ROLLING MILL EQUIPMENT

# Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

## Development of Electrical Control Influencing Machine Tool Design

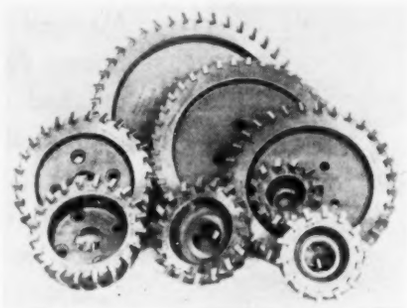
AMONG several obvious trends in machine tool design, that toward increasing application of automatic electric control is one which holds forth interesting possibilities. Such control is by no means a new development in machine design, it having been worked out to a high degree of refinement on other than metalworking machines during the past ten years. One example of the refined application of electric control is in connection with antiaircraft batteries, the range finding mechanism being made to sight and fire the guns through sentitive relay devices.

**Advantages of Electric Control**

Electric control of machine tools has two major advantages; it can be used to give rapid and precise motion to various isolated members from a central station convenient to the operator, as in the case of elevating the arm and traversing the head of a large radial drill, and it can be made use of to translate motion from delicate templets or other patterns to the slides carrying the cutting tools, in such a manner that the design of the templet or pattern is transferred to the work with accuracy and speed.

Electric control of machine tool elements from a central station already is in common use on radial drills and large planers in particular, and is proving highly successful. The tendency now is to develop control mechanisms of that sort expressly for machine tool use, as the requirements for power and precision, as well as for operating convenience, are rather more exacting in connection with machine tools than on other forms of machinery. There also is a tendency toward wider use of individual motors, especially those of the flange mounted and "can" types, in connection with this form of electric control.

Another form of electric control of a more refined character is apparent, only the beginnings of which are evident as yet in machine tool design. That is the relay control of the cutting tools so that the skill of the layout man is transferred directly to the work with little or no intervention of a machine operator, and by which the skill is multiplied by controlling many machines by one layout. This transfer of skill to machine tools was accomplished nearly 60 years ago by Christopher M. Spencer by means of his "brain-wheel" or cam drum control, but the new electric control is much more direct and refined than that.



*Inserted blade milling cutters are adjustable for wear*

**Significance of the Trend**

Beginnings have been made in the exact control of die cutting machines, and more lately of engine lathes by means of delicate "feelers" which follow the templet or pattern, and actuate relays which in turn cause powerful cutting tools to translate the pattern into the solid metal to an accuracy of 0.001 inch. The success which marks these early applications points to rapid and surprising developments toward the end of translating blue prints into actual work in the shop with less and less intervention on the part of machine operators. It is now being accomplished by using wood or plaster models or thin metal templets as the control actuating medium, and it is not beyond the realm of possibility that before long designs will be transferred to cards or paper strips which in turn will control batteries of production machines.

Designers of machine tools will do well to become familiar with the subject of electrical control. Application of this control may bring about revolutionary changes in machine tool design in the next few years.

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## Face Milling Cutters Have Positive-Lock Blades

Kearney & Trecker Corp., Milwaukee, announces a new line of face milling cutters with positively locked blades. These cutters, of which an assortment ranging in diameter from 5 to 16 inches appears in the accompanying illustration, are for use in general purpose and production milling on medium roughing and finishing accurate operations, rather than on heavy hogging. The blades are spaced so that the cutters are well suited for the milling of surfaces made up of thin, narrow sections.

**Method of Manufacture**

The bodies of the cutters are made of tough chrome-nickel steel forgings, normalized after rough machining, finish machined, case hardened, then finished by grinding top and bottom faces and the mounting fits. The blades, which may be of high-speed steel, stellite, or steel with tungsten-carbide tips, are ground in place. Positive locking of the blades is attained by means of hardened and ground taper wedges, the front side of each blade being ground to a taper corresponding to the contacting face of the wedge. A screw in each blade holds the setting even though the wedge should loosen slightly.

End slippage is prevented by a set of small pins, one of which is mounted in each slot in the body so as to fit into one of the grooves at the bottom edge of the blade. There are five pin holes ¼-inch apart in each of the slots and two slots in each blade, spaced ⅜-inch apart, thus allowing outward adjustment of the blades by steps of ⅛-inch as they become worn.

The bodies are cone-shaped and the blades are positioned at an angle to the axis of the body, thus allowing uni-

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Today the cost per pound for castings is only one-half of what it was ten years ago. Under the old methods of 1920 the man power employed was three times as large, in proportion to output, while the floor area required was five times as great as it is today.

Bartlett and Snow equipment, engineered to increase efficiency and to cut costs, has been a large factor in attaining these results. For Bartlett and Snow engineers take pride in their record for leading the way to new attainments in modern foundry practice. Foundries, both large and small, find that Bartlett and Snow equipment brings new standards of efficiency . . . higher standards of craftsmanship and welcome savings in costs. Write for Bulletin No. 63 which explains the benefits of these methods.

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form diameter to be maintained as the blades wear by adjusting them outward and grinding bottom and peripheral faces to suit. The angle of the blade mounting is different for high-speed steel and stellite, in order to give most effective cutting in each case. Blades are interchangeable and will fit any size of body.

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## Exact Control Is Attained in Large Planer

G. A. Gray Co., Cincinnati, recently completed the first of a new line of large planers, the size of which is indicated in the accompanying illustration. The machine weighs approximately 500,000 pounds and has capacity to plane work 12 feet wide, 10 feet high and 30 feet long. The design assures power and rigidity to permit of the heaviest cuts, and the cutting speed is unusually high for a large planer.

**Many Unique Features**

To give rapid and precise control and operating convenience, many of the traditional features common to ordinary planers have been broken away from in this design. To raise the massive rail, the operator merely presses a button on a pendant switch. This causes clamping motors to unclamp the rail, which then elevates automatically. Upon release of the button, the rail stops instantly and is clamped automatically. To give rapid traverse to a head in any direction, the operator makes a single shift of one lever in any one of three control stations.

Each rail head can be controlled at either end of the rail or at the head itself. Hand traverse of the cutting tool also can be carried out at any one of the three stations, and micrometer collars on the heads show movements of tool points by direct reading to 0.001 inch. The side heads also have three control stations each, one at the outer end, one on top near the inner end and one at the bottom near the inner end. All four heads are provided with automatic tool lifters which can be engaged and disengaged at will.

Although the rail heads weigh two tons each, they can be moved by hand horizontally, and the slides can be moved vertically, by a light touch on the control handles. This is made possible by a complete system of counterbalances. Tools on the rail heads can be brought within 2 inches of each other. Ease and precision of operation is promoted by generous use of ball and roller bearings, there being 407 in the machine.

The center section of the bed, containing the gear train and carrying the housings, is a casting 4 feet deep, weighing 36 tons. The bed is supported for its entire length on three rows of leveling screws, resting on steel plates grouted into the foundations. The table weighs approximately 60 tons and it slides on two vees and two flats. The vees are placed close together, one on each side of the rack, to give a desirable long narrow guide effect. Constant pressure lubrication of the ways is provided.

**Future Developments Considered**

The planer is designed to give cutting and return speeds which may be needed on account of future developments of tungsten carbide and other superspeed cutting alloys. The planer illustrated is equipped with a 75 horsepower, reversing motor drive with speed range from 200 to 1200 revolutions per minute, affording cutting speeds from 20 up to 120 feet per minute and independently variable return speeds covering the same range. The electric control mechanism was developed especially for this machine. Safety devices afford every possible protection, not only against undue strains on the machine but also against faulty operation.

*This photograph was taken on the occasion of the completion of this 250-ton planer with 12 x 10 x 30 foot working capacity*

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## Gear Compounds Provide Effective Lubrication

E. F. Houghton & Co., Philadelphia, has developed a new series of gear lubricants which resist being thrown off the gears while they are in motion. The lubricant is being made in four grades. One of the advantages of the series is its extremely low cold test. The two heavier grades, for example, can operate satisfactorily at 20 to 25 degrees Fahr. No special device or method of application is required with the use of the new lubricants.

## Grinders Have Adjustable Suction Dust Guards

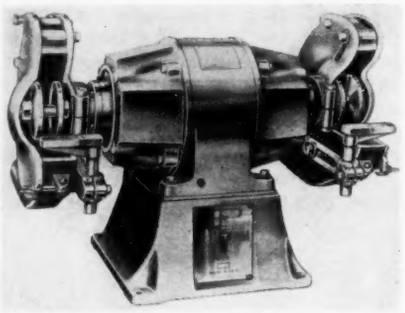
Stanley Electric Tool Co., New New Britain, Conn., has added to its line of tools four 10-inch electric grinders. The new grinders have exhaust-type wheel guards with adjustable dust shields for closing the gap between guard and wheel as the wheel wears. The motors are full ball bearing equipped and are totally enclosed. Two sizes, ¾ and 1-horsepower, are provided in both the bench and pedestal styles, the latter being shown in the accompanying illustration. They are furnished complete with toggle switch, adjustable tool rests and conduit box.

**General Specifications**

The smaller bench type is especially adapted for continuous service in factories and garages where a ¾-horsepower grinder is sufficient to do the work. For 30 and 60-cycle current, its speed is 1725 revolutions per minute, while for 25 and 50-cycle current the speed is 1425 revolutions per minute. The grinder uses wheels 10 inches in diameter and 1 inch thick, with ⅝-inch arbor holes. The distance between wheels

is 14½ inches, the length overall 20 inches and the height 15 inches. The pedestal grinder is the same as the bench type except that it is mounted on a cast-iron floor stand equipped with a shelf and water pot.

The 1-horsepower grinder is for heavy-duty continuous service and is powered with a totally enclosed ball bearing motor. The specifications for this grinder are identical with those given for the ¾-horsepower machine with the exception of the motor and the wheels, which are 10-inch diameter and 1¼ inches thick.



*A feature of this grinder is new design of dust guards*

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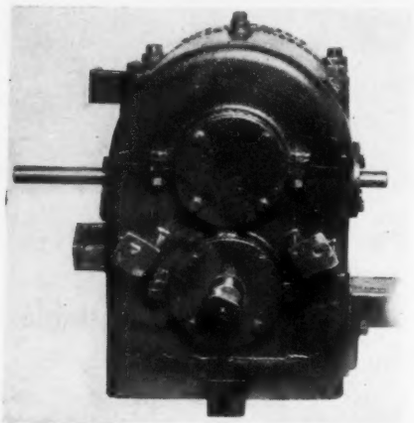
## Two-Speed Gear Unit Has Dust Proof Case

Gears & Forging Inc., Cleveland, announces a two-speed fully enclosed gear unit with dust-proof, split-housing. This is particularly adaptable to coal stoker service or other work where a great deal of grit is present. The two speeds are controlled by a conventional ball-and-socket shift lever which operates a double clutch of heat treated alloy steel. This clutch is of the 10-jaw type, facilitating prompt engagement at any speed or load.



*Rigorous service conditions will not cripple this gear unit*

**Stresses Carefully Computed**

The design of the unit, shown in an accompanying illustration, is based on a scientific computation of stresses, and all parts are manufactured to the highest automotive standards. Gears and shafts are of forged nickel-steel, heat treated to give maximum toughness and wearing quality and finished by grinding. The worm gear is of special bronze. Gears are accurately generated, and are subjected to a rigid system of inspection, being given a final test on fixtures before assembly into units.

All principal bearings are of the anti-friction type, selected for the load at each point, and accurately mounted. The compact housing is reinforced with ribs to give maximum rigidity. Through a unique arrangement of gears, the oil level is maintained below the input and output shaft, thus insuring against any possibility of oil leakage. All gears and bearings are afforded adequate lubrication by a simple and efficient splash system.

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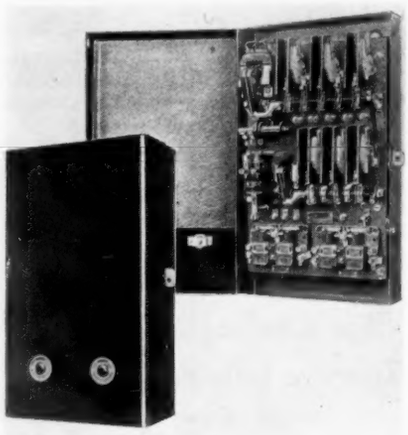
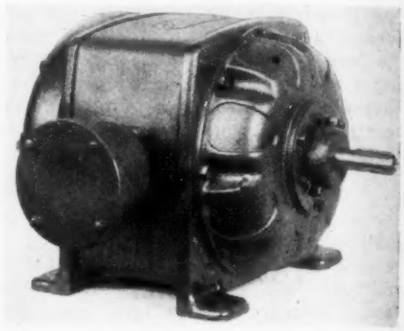
## Automatic Controller Gives Overload Protection

Cutler-Hammer Inc., Milwaukee, announces the development of an automatic controller for two-speed, consequent pole type squirrel cage motors. This controller, an illustration of which appears herewith, functions to start the motor and to change its speed by reconnecting the motor windings. It provides thermal overload protection at both motor speeds, as well as low voltage protection. A separate pushbutton master switch, with "stop," "low" and "high" buttons, provides three-wire remote control.



*New controller handles two-speed consequent pole, squirrel cage motors*

These new controllers are furnished for constant horsepower, constant torque and variable torque motors. A sequence-compelling feature can be furnished which makes it necessary always to start the motor on low speed before bringing it up to high speed. The entire mechanism is mounted on a single slate panel which is easily removed from the case. The split type enclosing case provides easy access to all parts when the cover is opened for inspection or service.



*This totally enclosed motor meets exacting specifications*

## Totally Enclosed Motors Have Fan Cooling

General Electric Co., Schenectady, N. Y., has developed a line of totally enclosed, fan-cooled motors for hazardous conditions specified as Class 1 in the National Electrical code. This line, which is the result of development over a number of years, conforms in most respects to the mounting dimensions of open general-purpose motors.

**Many Sizes Available**

The line of polyphase induction motors at present embraces ratings from ¾ to 30 horsepower in popular speeds. Their use is recommended under hazardous conditions such as exist in gasoline refineries, garages, gasoline handling and filling stations, chemical plants, and alcohol plants. These motors are suitable for either indoor or outdoor operation and eliminate the necessity for fire walls and other arrangements necessary with ordinary open or enclosed motors. In the line of single-phase motors, one of which is shown in the accompanying illustration, there are at present ratings from ½ to 2 horsepower, and fractional horsepower ratings from ¼ to ½ horsepower.

the latter being available in either repulsion-induction type or direct-current types. All these motors fully comply with the specifications of the Underwriters' laboratories for use in Class 1, Group D, and Class 2 hazardous locations.

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## Rubber Helmet Protects Sand Blast Operator

Pangborn Corp., Hagerstown, Md., announces an all-rubber helmet for use with sand blast equipment. This

*New helmet provides protection for sand blast operator*

new helmet which affords thorough protection to the operator's eyes, flesh and lungs, can be repaired as simply as patching a tire tube. It is equipped with a curved window giving true vision, the glass of which is protected by a bulged screen. Both glass and screen are easily replaceable. Water-washed and cooled air is piped into the back of the helmet, at any desired pressure and is kept circulating for comfortable breathing, while a fixed jet above the special sweat band cools the head. Air jets also blow on the outside of the visor from above to keep dust from fogging the visor window.

◆

## Pressure May Be Regulated on Spot-Welding Machine

American Transformer Co., Newark, N. J., has announced a new spot-welding machine, shown in the accompanying illustration, which is equipped with a quick-break contactor and has facilities for adjusting

*Device for adjusting pressure features spot welding machine*

the pressure. The contactor, a semi-automatic device which opens the primary circuit at will, permits the weld to freeze under pressure and prevents arcing at the electrodes. Because the pressure is adjustable for various types of work and is applied by a heavy spring rather than by the operator, the machine may be used for welding copper and brass, for resistance soldering, and for other applications requiring heavy pressure.

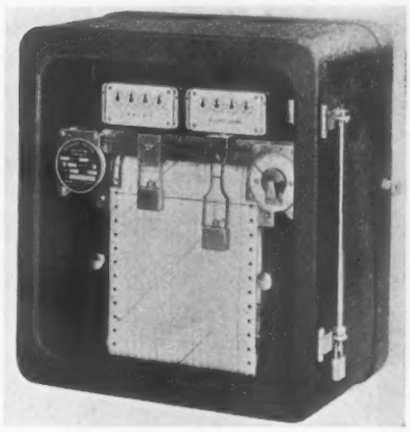
The welder is a bench-type unit mounted in a compact sheet-steel case requiring a space of 12 by 14 inches. It stands 28 inches high and has two electrodes which protrude 15 inches from the front of the case. It is available in 5, 7½ and 10-kilovolt-ampere sizes. Various electrodes are available, the type supplied depending upon the character of the work. In all cases the space between the points is adjustable, and, where the welder is to be used continuously, water-cooled electrodes are provided. The transformer employed is of the high-efficiency, short-coupled type; that is, the secondary leads have been made as short as possible in order to reduce heat losses.

◆

## Important Data Charted by New Demand Meter

Sangamo Electric Co., Springfield, Ill., has developed a meter especially built for the measurement of kilovolt-ampere demand in connection with the analysis of loads and the measurement of important service. This meter, shown in the accompanying illustration, is an auxiliary device controlled by two watthour meters, measuring the energy and reactive component, to give, on a single chart, the following information relative to the load: The kilovolt-ampere demand; kilowatt demand; maximum kilowatt demand; power-factor at time of demand; reactive component demand; the time that the demand occurred; the energy component in kilowatthours; and the reactive component in reactive kilovolt-amperehours.

The measurement is made so as to define the kilovolt-ampere demand as the vector sum of the voltamperes in the individual phases, and, therefore, agrees with the generally accepted definition of power-factor and kilo-



*Auxiliary meter charts variations of kilovolt-ampere demand*

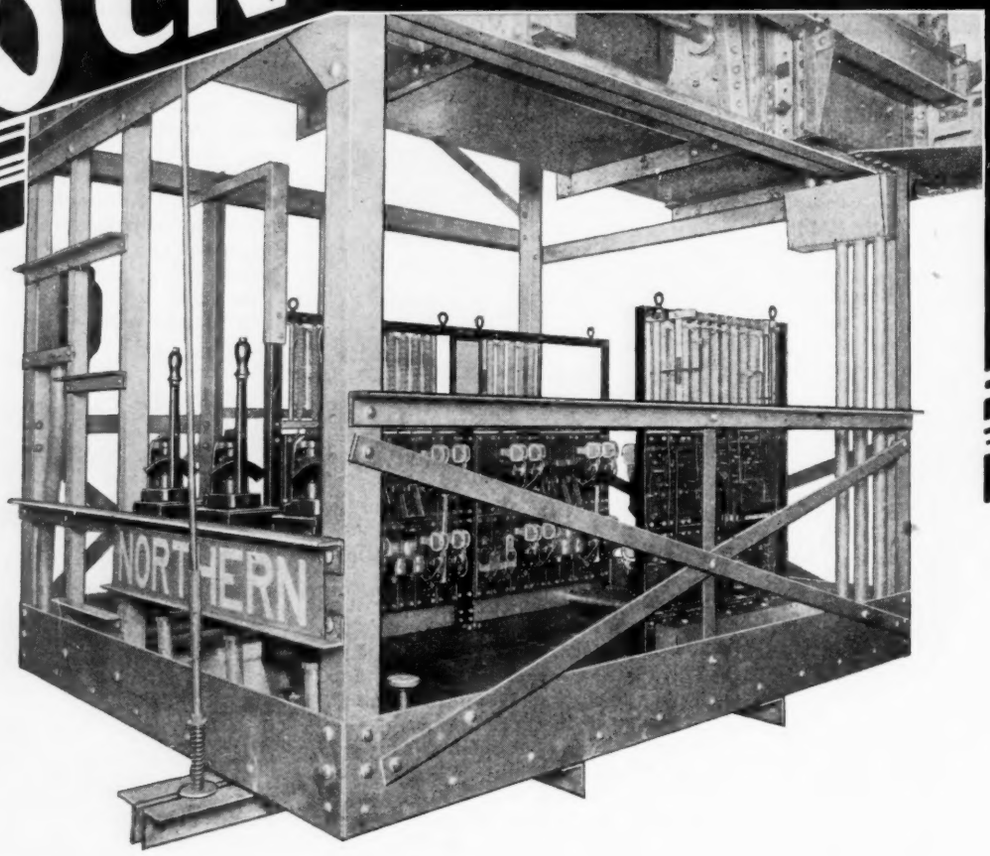
volt-ampere in polyphase circuits. The power triangle, corresponding to any given interval, is drawn on a strip chart.

◆

## Green Surfaced Electrode Forms Vapor Shield

Fusion Welding Corp., Chicago, has introduced a coated welding rod which is suitable for use either with direct or alternating current. The materials composing the coating of this rod are almost completely vaporized by the heat of the arc, this vapor immediately forming a sheath around the arc which continues to hug the arc until welding stops. This vapor sheath is an electrical conductor and its presence in and around the arc stream diminishes the normal arc resistance and aids in stabilizing the arc. The flow of the metal stream is smooth and a short arc length can be maintained. There are no objectionable fumes or odors from the rod, nor is any poisonous substance used. They are colored green only to distinguish them from other rods.

# 10 CRANES equipped like this!




## Clark "3C" Vari-Time Magnetic Controllers for Cranes

**Proof by trial is conclusive.**

Repeat orders duplicating the above illustrated installation give indisputable evidence of the merits of Clark Crane Control equipment. Hoist, Bridge and Trolley all controlled by Clark.

*Write for Bulletin 114.*

**THE CLARK CONTROLLER CO.**

• PHILADELPHIA • CANTON, O. • CHICAGO • DETROIT • PITTSBURGH •

AGENCIES IN U. S. A.
BIRMINGHAM CINCINNATI
KANSAS CITY ST. LOUIS

**CLEVELAND, O.**

AGENCY IN CANADA
RAILWAY & POWER ENGINEERING CORPORATION, LIMITED

# Pig Iron Rate Slump Accelerated

## Daily Rate in November Is Off 11 Per Cent, with Net Loss of 4 in Active Stacks—Await First-Quarter Prices on Heavy Steel—Wire Prices Extended

DECLINE in pig iron production, unbroken since May, was accelerated in Novemver when the daily rate slumped 11 per cent, to 62,180 gross tons, the lowest since August, 1924, and indicating an operating rate of only 44.1 per cent for the pig iron industry.

November's daily rate compares with 69,851 tons in October and 106,081 tons last November. November's total of 1,865,415 gross tons is 13.8 per cent below the 2,165,374 tons of October, the apparent discrepancy with the daily rate being due to the shorter month.

In 11 months of 1930 output of pig iron has been 29,775,730 tons. This compares with 39,453,266 tons in the like period of 1929 and 34,461,857 tons in 1928. At the close of November only 107 of the country's 310 stacks were active, or 4 fewer than on Oct. 31. Not since October, 1921, have so few stacks been in blast.

November's steel ingot output, to be announced next week, will also be lower, possibly revealing a daily rate well under 100,000 tons or the smallest since July, 1924. Steelmaking operations have receded this week to a scant 40 per cent, compared with 43-45 last week, with Chicago now 45 per cent, Cleveland 44, Youngstown and Birmingham 43, eastern Pennsylvania and Buffalo 40, and Pittsburgh under 40.

Following last week's burst of railroad activity, the matter of first quarter prices, especially on steel bars, plates and shapes, has taken a commanding position. With the first quarter barely a month distant and producers unwilling to extend the current base of 1.60c, Pittsburgh, consumers manifest unusual interest in covering. It is generally expected that an advance, probably of $1 per ton, will be decreed soon, perhaps this week.

On wire products, current prices of $1.90, Pittsburgh-Cleveland, on wire nails, 2.30c on plain wire and $36 on wire rods have been quietly applied to first quarter business. In some districts bolt and nut prices have been continued, an announcement on rivets being scheduled for about Dec. 10. Moderate interest is displayed in first quarter contracts on sheets and strip, prices being unchanged.

Continuance of current levels on pig iron into the first quarter has been accompanied by a marked expansion in inquiry, and commitments are expected shortly from melters usually covering by quarters. At New York the week's sales again topped 10,000 tons. Shipments in many districts for December melting evidence a mild decline. The last cargo of the season of boat iron has been docked at Chicago, making the movement 30,000 tons this year. Covering by "shorts" has helped stem the downward tide in scrap.

Chicago, Milwaukee, St. Paul & Pacific will rebuild 4000 to 5000 freight cars in its own shops, and is inquiring for 57 locomotives. The New York Central inquiry for 50 locomotives, on which all builders are bidding aggressively, will probably be duplicated. Revival of the Illinois Central inquiry for 2000 cars is expected.

Canadian National has awarded 500 refrigerator cars and 10 locomotives to its own shops. A Lehigh Valley inquiry is out for 100 gondolas. Locomotive orders include ten by the Reading and two by the Chicago & Illinois Midland. Expected nearby rail distribution includes 10,500 tons by the Wabash, 8000 by the Kansas City Southern, and 5000 by the Chicago Great Western.

Building steel orders and inquiries continue to sag, chiefly for seasonal reasons, structural awards this week, totaling only 21,190 tons against 35,037 tons last week and 24,403 tons a year ago. Projects requiring 25,000 tons are active at Chicago, with 80,000 tons of inquiry expected in 30 days. Some makers of full-finished sheets report the best run of orders in months from automotive interests bringing out new models.

Spiegeleisen has been reduced $3 per ton, to $30, furnace. A determination on ferromanganese is looked for shortly.

Due to weakness in eastern pig iron, STEEL's market composite is off 2 cents this week, to $31.84, another new alltime low.

### Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

| | |
|---|---|
| **This week (Dec. 3, 1930)** | **$31.84** |
| **Last week (Nov. 26, 1930)** | **31.86** |
| **One month ago (November, 1930)** | **31.92** |
| **Three months ago (September, 1930)** | **32.65** |
| **One year ago (December, 1929)** | **35.95** |
| **Ten years ago (December, 1920)** | **54.04** |

# Comparative Prices of Iron, Steel and Coke

**Representative Market Figures for This Week, Last Month, Three Months and One Year Ago**

| | Dec. 3, 1930 | Nov. 1930 | Sept. 1930 | Dec. 1929 |
|---|---|---|---|---|
| **PIG IRON** | | | | |
| Bessemer, del. Pittsburgh | $18.76 | 18.76 | 20.13 | 20.76 |
| Basic, valley | 17.00 | 17.00 | 17.75 | 18.50 |
| Basic, eastern del. eastern Pa. | 17.50 | 17.50 | 17.88 | 19.75 |
| No. 2 foundry, del. Pittsburgh | 18.26 | 18.26 | 19.13 | 19.76 |
| No. 2 foundry, Chicago | 17.50 | 17.50 | 17.50 | 20.00 |
| *Southern No. 2, Birmingham | 14.00 | 14.00 | 14.00 | 14.25 |
| **No. 2X, Virginia furnace | 18.25 | 18.25 | 18.25 | 18.25 |
| **No. 2X, Eastern del. Phila. | 18.76 | 19.26 | 19.76 | 21.76 |
| Malleable, valley | 17.50 | 17.50 | 18.35 | 19.00 |
| Malleable, Chicago | 17.50 | 17.50 | 17.50 | 20.00 |
| Lake Superior, charcoal, del. Chi. | 27.04 | 27.04 | 27.04 | 27.04 |
| Gray forge, del. Pittsburgh | 17.63 | 17.63 | 18.50 | 19.13 |
| Ferromanganese, del. Pittsburgh | 103.79 | 103.79 | 103.79 | 104.79 |
| **COKE** | | | | |
| Connellsville furnace, ovens | 2.55 | 2.55 | 2.60 | 2.65 |
| Connellsville foundry, ovens | 3.50 | 3.50 | 3.50 | 3.50 |
| **SEMIFINISHED MATERIAL** | | | | |
| Sheet bars, open-hearth, Youngs. | 31.00 | 31.00 | 31.00 | 34.00 |
| Sheets bars, open-hearth, Pitts. | 31.00 | 31.00 | 31.00 | 34.75 |
| Billets, open-hearth, Pittsburgh | 31.00 | 31.00 | 31.00 | 34.75 |
| Wire rods, Pittsburgh | 36.00 | 36.00 | 36.00 | 40.00 |

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

| | Dec. 3, 1930 | Nov. 1930 | Sept. 1930 | Dec. 1929 |
|---|---|---|---|---|
| **FINISHED MATERIAL** | | | | |
| Steel bars, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.90 |
| Steel bars, Chicago | 1.70 | 1.70 | 1.70 | 2.00 |
| Steel bars, Philadelphia | 1.89 | 1.89 | 1.89 | 2.22 |
| Iron bars, Chicago | 1.70 | 1.70 | 1.75 | 2.00 |
| Shapes, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.90 |
| Shapes, Philadelphia | 1.76 | 1.71 | 1.66 | 1.91 |
| Shapes, Chicago | 1.70 | 1.70 | 1.70 | 2.00 |
| Tank plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.90 |
| Tank plates, Philadelphia | 1.80½ | 1.805 | 1.805 | 2.10 |
| Tank plates, Chicago | 1.70 | 1.70 | 1.70 | 2.00 |
| Sheets, blue anl., No. 13, Pitts. | 2.05 | 2.05 | 2.10 | 2.15 |
| Sheets, black, No. 24, Pitts. | 2.35 | 2.35 | 2.40 | 2.75 |
| Sheets, gal., No. 24, Pittsburgh | 2.90 | 2.95 | 3.00 | 3.40 |
| Sheets, black, No. 24, Chicago | 2.50 | 2.45 | 2.60 | 2.90 |
| Sheets, blue anl., No. 13, Chicago | 2.30 | 2.30 | 2.30 | 2.50 |
| Sheets, galvanized, No. 24, Chi. | 3.15 | 3.15 | 3.25 | 3.60 |
| Plain wire, Pittsburgh | 2.30 | 2.30 | 2.30 | 2.40 |
| Wire nails, Pittsburgh | 1.90 | 1.90 | 2.00 | 2.40 |
| Tin plate, per base box, Pitts. | 5.00 | 5.00 | 5.25 | 5.35 |
| **SCRAP** | | | | |
| Heavy melting steel, Pitts. | 12.75 | 13.10 | 15.70 | 15.10 |
| Heavy melting steel, eastern Pa. | 11.25 | 11.50 | 13.00 | 14.50 |
| Heavy melting steel, Chicago | 10.00 | 10.20 | 12.25 | 12.50 |
| No. 1 wrought, eastern Pa. | 13.50 | 13.50 | 14.25 | 15.25 |
| No. 1 wrought, Chicago | 10.00 | 10.00 | 11.25 | 13.25 |
| Rails for rolling, Chicago | 13.00 | 13.10 | 14.50 | 14.60 |

# Sheets

## More Interest in First Quarter, but Large Tonnage Is Lacking —Chicago Most Active of Year

SHEET PRICES, PAGE 87

**Pittsburgh**—Increased interest of consumers in first quarter sheet tonnage is noted. Specifications for current requirements continue light. Operations still are moderating slightly, though a better tone is evident. Some requests are appearing for coverage over a longer period than three months but producers are interested in contracts at current prices only over the first quarter. The market usually continues 2.35c to 2.45c for black sheets, 2.90c to 3.00c for galvanized, 1.90c for blue annealed plates, and 3.30c for autobody. Automotive tonnage is light, with future requirements of leading consumers not clearly defined.

**New York**—Sheet buying remains light, with 2.90c to 3.00c, Pittsburgh, for galvanized; 2.35c, for black; 1.90c for No. 10 blue annealed, and 2.05c for No. 15. Except for galvanized, on which an effort is being made to establish a 3.00c minimum, sheets are being quoted at these levels for first quarter.

**Philadelphia**—Contracting for first quarter has begun, but few buyers have closed. Current prices are 3.00c, base, Pittsburgh, for galvanized, with 2.90c to jobbers; 2.35c for black; 1.90c to 2.00c for blue annealed plates, and 2.05c to 2.15c for blue annealed sheets.

**Buffalo**—A strong trend is noted toward an effort to establish 2.35c, base, for black sheets to the regular trade. Doubt is expressed whether the full base price was obtained on a 1500-ton lot placed last week in central New York.

**Youngstown, O.**—While more independent sheet mills are idle this week in this district than in months, mill managers are not pessimistic. Some of them are cheerful, having discounted the expected slowing down of the industry in December for inventory. In January they confidently expect to be running at a fair rate. The largest maker of popular price cars is expected to close Dec. 15 or 22 for two weeks for inventory. The approaching automobile shows seem to be spurring other makers to more ambitious building programs not yet made public. While four out of the five sheet mills at Niles, O., are down this week and the fifth is running at a low rate, one of those idle is expected to resume next Monday. Quotations on common black sheets continue 2.35c to 2.45c, Pittsburgh, both for prompt delivery and for first quarter, as named a week ago by the American Sheet & Tin Plate Co. Specifications for autobody for December delivery carry the price of 3.40c, base, in important instances, although contracts for first quarter are being closed at 3.30c. The American company's announced price of 3.30c for galvanized also is being accepted here.

**Cleveland**—Sheet demand is sustained from those sources which have been good or fair consumers for the past several weeks. No additional users have come into the market, and miscellaneous business is in small amounts for orders in hand. Steel barrel manufacturers again are taking fair tonnages of 16-gage blue annealed and galvanized sheets for alcohol containers, but demand for oil and grease drums, has fallen off. The local Fisher Body plant is assembling about 1000 jobs daily, but its stamping department is utilizing more material than that for knockdown shipments.

Recently announced prices hold for first quarter, with little tonnage.

**Chicago**—Active contracting in sheets for first quarter is noted, with an extremely small flow of specifications. The number of buyers contracting for the first period makes a record for forward commitments this year. Operations at 40 to 50 per cent are the lowest of the year. Possibility is seen that at least a part of the operations may go down entirely for the last ten days of the month. A minimum of 2.55c, mills, for No. 24 black sheets is being established.

# Current Finished Steel Prices

**Prices in cents per pound unless otherwise stated**

## Steel Sheets

**SHEET MILL BLACK, NO. 24**

| | |
|---|---|
| Pittsburgh base | 2.35c to 2.45c |
| Philadelphia, delivered | 2.64c to 2.74c |
| Gary, Indiana Harbor | 2.45c to 2.55c |
| Chicago, delivered | 2.50c to 2.60c |
| Birmingham, base | 2.60c |
| St. Louis, del. | 2.80½c |

**TIN MILL BLACK, NO. 28**

| | |
|---|---|
| Pittsburgh, base | 2.65c to 2.75c |
| Gary, base | 2.75c to 2.85c |

**GALVANIZED NO. 24**

| | |
|---|---|
| Pittsburgh, base | 2.90c to 3.00c |
| Philadelphia, delivered | 3.19c to 3.29c |
| Gary Indiana Harbor | 3.10c |
| Chicago, delivered | 3.15c |
| Birmingham, base | 3.05c to 3.15c |
| St. Louis, del. | 3.35½c |

**BLUE ANNEALED SHEETS NO. 13**

| | |
|---|---|
| Pittsburgh, base | 2.05c |
| Chicago, district mills | 2.25c |
| Chicago, delivered | 2.30c |
| St. Louis, delivered | 2.50½c |
| Philadelphia, delivered | 2.34c to 2.44c |
| Birmingham | 2.20c to 2.30c |

**BLUE ANNEALED PLATES, NO. 9-10**

| | |
|---|---|
| Pittsburgh, base | 1.90c |
| Chicago, district mills | 2.10c |
| Chicago, delivered | 2.15c |
| Philadelphia, delivered | 2.19c to 2.29c |
| St. Louis, delivered | 2.35½c |
| Birmingham | 2.05c to 2.15c |

**AUTOMOBILE NO. 20**

| | |
|---|---|
| Pittsburgh, base | 3.30c |

**FURNITURE NO. 24**

| | |
|---|---|
| Pittsburgh, patent leveled | 3.60c |

## Tin and Terne Plate

**Prices per 100-pound box Pittsburgh**

| | |
|---|---|
| Tin plate, coke base | 5.00 |
| Gary, Ind., base 10 cents higher. | |
| Long ternes, 24, assorted | 3.55c |
| Long ternes, 24, unassorted | 3.45c |

## Wire Products

**(To Jobbers-Merchant Trade)**

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

| | |
|---|---|
| Standard wire nails | $1.90 and 1.95 |
| Cement coated nails | 1.90 and 1.95 |
| Galvanized nails | 3.90 and 4.00 |

(Per pound)

| | |
|---|---|
| Polished staples | 2.35c and 2.45c |
| Galvanized staples | 2.60c and 2.70c |
| Barbed wire, gal. | 2.55c and 2.65c |
| Annealed fence wire | 2.05c and 2.15c |
| Galvanized wire | 2.50c and 2.60c |

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

**(To Manufacturing Trade)**

| | |
|---|---|
| Plain wire, 6-9 gage | 2.30c |
| Spring wire | 3.30c |
| Wire, delivered Detroit | 2.53½c |
| Nails, delivered Detroit | $2.38½ |

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

## Rivets

| | |
|---|---|
| Struc. c.l., Pitts.-Cleve. | 2.75c |
| Struc., c.l., Chicago | 2.85c |
| **7/16-inch and smaller, Pitts. | 70, 10 and 5 off |
| Chi., Cleve. | 70 to 70, 10 and 5 off |

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

## Steel Plates

| | |
|---|---|
| Base, Pittsburgh | 1.60c |
| Philadelphia, del. | 1.80½c |
| New York, del. | 1.88c |
| Boston, del. | 2.00c |
| Chicago, base | 1.70c to 1.75c |
| Cleveland, delivered | 1.78½c to 1.88½c |
| Lackawanna, N. Y., base | 1.70c |
| Birmingham, base | 1.75c |
| Coatesville, Pa., base | 1.70c |
| Pacific Coast, c.i.f. | 2.10c to 2.20c |
| St. Louis, del. | 1.95½c |

## Structural Shapes

| | |
|---|---|
| Base, Pittsburgh | 1.60c |
| Philadelphia, del. | 1.76c |
| New York, del. | 1.75½c to 1.85½c |
| Boston, del. | 1.88½c to 1.98½c |
| Chicago, base | 1.70c to 1.75c |
| Cleveland, delivered | 1.83½c to 1.88½c |
| Lackawanna, N. Y., base | 1.70c |
| Birmingham, base | 1.75c |
| Pacific Coast, c.i.f. | 2.15c to 2.25c |

## Bars

**SOFT STEEL**

| | |
|---|---|
| Pittsburgh, base | 1.60c |
| Chicago, base | 1.70c to 1.75c |
| Birmingham, base | 1.75c to 1.80c |
| Lackawanna, N. Y., base | 1.70c to 1.75c |
| Pacific Coast, c.i.f. | 2.10c to 2.20c |
| Cleve. base, local del. | 1.65c |
| Do, outside delivery | 1.65c |
| Philadelphia, del. | 1.89c |
| New York, delivered | 1.93c to 1.98c |
| Boston, delivered | 2.00c to 2.05c |
| Pittsburgh, cold finish | 1.75c to 1.80c |
| Pittsburgh, forg. qual. | 1.85c to 1.90c |

**RAIL STEEL**

| | |
|---|---|
| Chicago Heights | 1.65c |
| Eastern mills | 1.65c |

**IRON**

| | |
|---|---|
| Chicago, base | 1.70c |
| New York, delivered | 1.93c to 1.98c |
| Philadelphia, delivered | 1.89c to 1.94c |
| Pittsburgh, refined | 2.75c to 4.25c |

**REINFORCING**

| | |
|---|---|
| Pitts., billet cut lengths | 1.90c to 2.00c |
| Stock lengths, mill | 1.65c to 1.75c |
| Chi. billet | 1.70c to 1.80c |
| Chi., rails steel | 1.50c to 1.60c |
| Chi. rail steel, road and bridge work | 1.65c to 1.75c |
| Philadelphia, cut lengths | 2.04c to 2.09c |

## Cold-Finished Steel Bars and Shafting

| | |
|---|---|
| Base, Pittsburgh, Chicago, Buffalo and Cleveland | 2.00c to 2.10c |
| Shafting, turned and ground, mill | 2.45c to 2.90c |

## Corrosion, Heat Resist. Alloys

**Base, Pittsburgh**

**18 per cent chrome, 8 per cent nickel**

Sheets, 35c; plates 31c; bars 28c

| | A | B | C | D |
|---|---|---|---|---|
| Bars | 19c | 20.5c | 23c | 28c |
| Plates | 21c | 22.5c | 25c | 30c |
| Sheets | 26c | 27.5c | 30c | 35c |
| Hot strip | 19c | 20.5c | 23c | 28c |
| Cold strip | 28c | 29.5c | 32c | 37c |

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

## Wrought Washers

| | |
|---|---|
| Carloads, Pitts. dist. | $6.50 to $6.75 off |
| Carloads, Chicago dist. | 6.70 to 6.80 off |

## Alloy Steel

**Hot Rolled—F.o.b. Mills**

Alloy Quality Bar Base is 2.65c

| S.A.E. | Alloy Diff. | S.A.E. | Alloy Diff. |
|---|---|---|---|
| 2000 | 0.25 | 1.25-1.75 Ni | 1.05 |
| 2100 | 0.55 | 5100 .80-1.10 | |
| 2300 | 1.50 | Cr. | 0.45 |
| 2500 | 2.25 | 5100 Chr. spring | 0.20 |
| 3100 | 0.55 | 6100 bars | 1.20 |
| 3200 | 1.35 | 6100 Spring | 0.95 |
| 3300 | 3.80 | Chr., Ni., Van. | 1.50 |
| 3400 | 3.20 | Carbon Van. | 0.95 |
| 4100 .15 to .25 Mo. | 0.50 | 9250 (flats) | 0.25 |
| 4600.20 | 30 mo. | 9250 (rds., sq.) | 0.50 |

## Strip, Hoops, Bands

| | |
|---|---|
| Hot strip, to 6-in., Pitts. | 1.65c to 1.70c |
| Hot strip 6 1/16 to 24-in. Pitts. | 1.55c to 1.60c |
| Hot strip, bands 6 in. and under, Chicago | 1.80c |
| Do. 6 1/16 to 24 in. | 1.70c |
| Cooperage hoop, Pitts. | 1.90c to 2.00c |
| Do, Chicago | 2.00c to 2.10c |
| Cold rolled strip, Pitts., Cleve., 3 tons, over | 2.25c to 2.35c |
| Worcester, 3 tons, over | 2.40c to 2.50c |

## Rails, Track Material

| | |
|---|---|
| Standard bess. and open hearth rails, mill | $43.00 |
| Relay rails, Pitts., 60 to 90 lb. | $24.00 to 28.00 |
| Light rails, 25-45, mills | $34.00 |
| Angle bars, Chi. base | 2.75c |
| Spikes, railroad, mills | 2.80c |
| Spikes, railroad, 7/16-in. and smaller, Pitts | 2.80c |
| Spikes boat, barge, Pitts. | 3.00c |
| Spikes, railroad, Chi. | 2.80c |
| Track bolts, Pitts., steam roads | 3.80c |
| Do. standard, jobbers | 73 off list |
| Track bolts, Chicago | 3.80c |
| Tie plate, mills | $39.00 |

## Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

**CARRIAGE BOLTS**

| | |
|---|---|
| All sizes, cut thread | 73 off |

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

| | |
|---|---|
| Eagle list | 73 off |

**MACHINE BOLTS**

| | |
|---|---|
| All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts | 73 off |

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

**NUTS**

| | |
|---|---|
| Semifinished | 73 off |

**HEXAGON CAP SCREWS**

| | |
|---|---|
| Milled | 80-10-10-5 off |
| Upset 1 in. diam. and smaller | 85-10 off |

**SQUARE HEAD SET SCREWS**

| | |
|---|---|
| Milled | 80-5 off |
| Upset 1 in. and smaller | 80-10-5 off |
| Upset, larger than 1 in. | 80-5 off |

## Cut Nails, Chain, Piling

| | |
|---|---|
| Cut nails, c.l., mills | 2.45c |
| Do, less carloads | 2.55c |
| Chain, BB, BBB, 9/16-1½ in. | 33 1/3 off |
| Sheet piling, Pitts. | 2.00c |

# Bars

**Fair Demand Continues with First Quarter Inquiry Appearing—Price May Be Advanced**

BAR PRICES, PAGE 87

**Chicago** — Orders from forgers, parts makers and cold finishers in automotive centers help maintain the recently improved bar products specifications. Mill operations remain above 50 per cent. Road machinery builders' specifications also are fair. Implement makers still are in doubt about winter production schedules. Finished steel, including bars, ordered out by western railroads for shop work is growing. The price of 1.70c, mill, for soft steel bars is untested by tonnages but is regarded as steady.

**New York**—While some steel bar sellers here expect an advance of $1 a ton in first quarter prices, no announcement has been made and the market generally remains at 1.60c, Pittsburgh, with some small lots taking 1.65c. Trading still is light, with prompt shipments usually available.

**Philadelphia** — Demand for soft steel bars continues good. Consumers and jobbers are beginning to inquire for first quarter prices but mills are not yet ready to quote for that delivery. The current bar price is firm at 1.60c, Pittsburgh.

**Pittsburgh**—Steel bar producers defer announcement of first quarter price. The market is 1.60c, Pittsburgh, on current tonnage and although there have been intimations of an advance for next quarter, definite announcement is lacking. The recent setting of a 1.60c minimum has aroused some interest on the part of buyers in future tonnage. Orders currently are light and lack improvement over those of a month ago.

**Cleveland**—Orders are fairly numerous for small lots of bars to outside mills at 1.60c, Pittsburgh, price. Local mills for local delivery claim 1.65c, base, but this figure is not clearly defined, and some 1.60c business is moving. November orders for one of the large sellers in this district bettered October, though December is counted on to be off, with small shipments. Consumers guard against extensive inventories. Interest has been manifest in first quarter by consumers from producers' reticence to take first quarter contracts at the current 1.60c price. By this action some hint a price revision upward would not be surprising, to occur possibly in the near future.

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Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been awarded a contract for 30 visual type radio beacon transmitters at a cost of over $250,000.

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## Cold-Finished Orders Declining in November

Cold Finished Prices, Page 87

**Cleveland**—For three weeks in November, cold-finished bar demand held to previous levels. The last week of the month brought about a decline in specifications from the automotive standpoint. Approaching inventories curtail shipping instructions. Demand will be small over the remainder of the year. From 2.00c to 2.10c, Cleveland, is quoted.

**Pittsburgh**—New business in cold-finished steel bars is light. November shipments compared favorably with those of October but incoming tonnage was off slightly. Producers defer announcement of first-quarter prices. Inquiry for that period is light. The market continues 2.00c to 2.10c.

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Stoll Mfg. Co., 2126 South avenue, LaCrosse, Wis., has incorporated as Stoll Mfg. Co. Inc., with $60,000 capital. It produces tools, dies, jigs, and stampings.

# Plates

**Railroad and Refinery Work Fairly Active—Chicago Mills on 70 to 80 Per Cent Schedules**

PLATE PRICES, PAGE 87

**New York**—No definite announcement has yet been made on first quarter prices. Meanwhile, the market is unchanged at 1.70c, Coatesville, Pa., with less than carloads generally bringing 1.75c. Demand is better, although still far from active. One hundred all-steel gondolas for the Lehigh Valley will take approximately 2000 tons of steel, mainly plates. The Erie is in the market for a barge, requiring 150 tons of plates, and the local department of plants and structures is inquiring for two barges, taking an aggregate of 600 tons, of which close to 500 tons are plates.

**Boston**—The Boston Transit commission is about to award 600 tons of plates, to be welded into waterpipe and specials, for construction work at the subway underpass at Kenmore square, Boston.

**Philadelphia** — Plate demand is slow, eastern mills operating at 40 per cent. Prices are fairly firm at 1.70c, base, Coatesville, Pa. About 2400 tons of plates will be required for a gas holder at Reading, Pa., and a large tonnage also will be needed for the Philadelphia gas works' gas holder at Lardner's point, Philadelphia, to come up shortly. About 400 tons of plates are required for ten locomotives placed by the Reading railroad with the Baldwin Locomotive Works.

**Pittsburgh**—Plates are quiet, requirements of pipe producers lacking most of the activity noted in recent months while demand from freight car and barge builders is dull. Outlook in the barge market has improved as the result of prospective inquiry from the Inland Waterways Corp. for 50 barges and three tow boats. The latter will take about 600 tons of plates and shapes, while the barges each require about 500 tons. Plates are steady at 1.60c, Pittsburgh.

**Cleveland**—The 1.60c, Pittsburgh, price is firm and producers feel further assurances of this will be gained by customers during December. Biggs Boiler Works Co., C. F. Adamson & Co., and other boiler and tank manufacturers work on restricted operating schedules. Boilermakers with special jobs for after Jan. 1 will specify in December, but the manufacturer taking plates for a standard product is in step with general low manufacturing activity. With inventory approaching shipments can be expected to be low in December. Little interest is manifest in first quarter, except inquiries from some of the railroads.

Several small orders for plates for building construction purposes went to a Mahoning valley mill this week at 1.60c, Pittsburgh.

**Chicago**—Skelp shipments to the Milwaukee pipe welder will be about 25,000 tons from Chicago district plate mills this month. Plate schedules lead all finishing mills. A storage tank builder which now is booked ahead several weeks has ordered out 5000 tons for miscellaneous refinery

work in the oil country. Railroad orders for shop work are being increased. Plate deliveries present no problem despite mill operations of 70 to 80 per cent. Mills are quoting 1.70c, Chicago, as the plate base.

## Contracts Pending

2500 tons, eight 300-ton tank tops for ship repairs, lower Great Lakes port delivery; inquiry out.

150 tons, barge, Erie railroad; bids asked.

500 tons, two barges, department of plants and structures, New York. Bids asked.

1500 tons, 100 gondolas for Lehigh Valley.

600 tons, Boston Transit commission.

2400 tons, gas holder at Reading, Pa.

Unstated tonnage for gas holder for Philadelphia gas works.

## Contracts Placed

100 tons, one 40,000-barrel tank for Pasadena, Calif., to Consolidated Steel Corp., Los Angeles.

# Railroads

**Car Building Program Forges Ahead—Repairs Take Large Tonnages—Engine Inquiry Up**

TRACK MATERIAL PRICES, PAGE 87

**New York**—An inquiry for 100 gondolas for Lehigh Valley features fresh inquiry here. Buying is light, although early action is expected on the 289 subway cars on which bids were recently opened by the Interborough Rapid Transit Co. Reading has awarded ten large freight locomotives to Baldwin Locomotive Works. New York Central may expand its 50-locomotive inquiry to 100.

Domestic freight car awards in November totaled 2580 as compared with 4075 for October. This brings the total to 42,212 for 11 months as against 96,395 for the comparable period, 1929. Full comparisons follow:

| | 1930 | 1929 | 1928 | 1927 |
|---|---|---|---|---|
| Jan. | 5,072 | 13,196 | 4,160 | 14,710 |
| Feb. | 17,027 | 15,944 | 10,220 | 5,960 |
| March | 6,118 | 12,023 | 2,958 | 4,955 |
| April | 1,997 | 8,205 | 6,043 | 3,675 |
| May | 1,392 | 7,562 | 2,531 | 5,425 |
| June | 998 | 5,886 | 2,422 | 7,440 |
| July | 1348 | 341 | 582 | 2,295 |
| Aug. | 1,070 | 2,854 | 677 | 1,181 |
| Sept. | 535 | 4,517 | 1,378 | 682 |
| Oct. | 4,075 | 19,506 | 2,853 | 886 |
| Nov. | 2,580 | 6,361 | 6,140 | 1,189 |
| Total 11 mos. | 42,212 | 96,395 | 39,287 | 48,398 |
| Dec. | ..... | 9,710 | 4,799 | 14,897 |
| Total | ..... | 106,105 | 44,763 | 63,295 |

**Pittsburgh**—November business in steel railroad material showed a moderate improvement over that of the preceding two months but still is seasonally light. Recent awards include 1000 kegs of spikes by the New York, New Haven & Hartford railroad. Boston & Maine is inquiring for tie plates to accompany its annual rail requirements. Inquiry for cars is light. Light and relaying rails are quiet.

**Chicago**—Chicago Great Western is expected to have a rail inquiry of 5000 tons before the market soon, while Kansas City Southern is inquiring for about 8000 tons. The Wabash order for 10,500 tons is expected to be entered shortly. From 1000 to 1500 tons of track accessories have been booked, including an order for 800 tons of angle bars. Fairly heavy inquiry exists for fastenings. Rail mill operations have been increased slightly to 30 to 35 per cent. One road has increased its orginal schedule of rails to be shipped in December about 1000 tons. More roads are said to be planning rebuilding and conversion of cars in their own shops. Such a program may be undertaken by Great Northern.

## Car Orders Placed

Mexican Railways Ltd., five cabooses reported placed with American Car & Foundry Co., New York.

Canadian National, 500 refrigerator cars, to own shops; 250 to London, Ont., and 250 to Transcona, Man., instead of 250 to Winnipeg as noted last week.

Fruit Growers Express, 100 underframes, to Siems-Stembel plant of Standard Steel Car Co., Pittsburgh; these in addition to 100 underframes noted last week as going to Greenville Steel Car Co., Greenville, Pa.

## Locomotives Placed

Chicago & Illinois Midland, two locomotives, to the Lima Locomotive Works, Lima, O.

Canadian National, recently noted as contemplating the erection of 10 locomotives, will build this equipment in its Windsor, Ont., shops.

Reading Co., 10 large locomotives, to Baldwin Locomotive Works, Eddystone, Pa.

## Car Orders Pending

Chicago, Milwaukee, St. Paul & Pacific, 4000 to 5000 freight cars contemplated.

Illinois Central, 2000 freight cars; orders expected the first of 1931.

Lehigh Valley, 100 70-ton gondola cars; bids asked.

New York Board of Transportation, 15 street cars.

Northern Pacific, rebuilding of 3000 freight cars as noted last week, will require approximately 25,000 tons of fabricated steel, 3000 tons of steel forgings and 2700 tons of iron and steel castings.

Philadelphia & Western, 12 interurban cars.

Sanitary District of Chicago, 25 air dump.

## Locomotives Pending

Chicago, Milwaukee, St. Paul & Pacific, 57 freight engines to cost $5,000,000.

Illinois Central, expected to inquire shortly for large number of locomotives.

New York Central, recently noted as inquiring for 50 locomotives, expected in market later for 50 additional.

## Rail Orders Pending

Chicago Great Western, 5000 tons.

Kansas City Southern, 8000 tons.

Unstated tonnage, 8.5 miles between the Okanogan Falls-Oliver line and the branch from South Penticton, B. C., for Kettle Valley railway, Vancouver, B. C.; C. A. McCulloch, chief engineer to open bids Dec. 1.

## Tin Plate Output Better Than Expected

Tin Plate Prices, Page 87

**Pittsburgh**—Tin plate consumers are slow to sign first half contracts. Little change is noted in specifications with operations unchanged at 40 to 45 per cent. The year's output of tin plate gives evidence of equalling, if not improving upon, estimates made during the middle of this year. A decrease of around 10 per cent in output compared with 1929 was estimated. Tin plate continues $5 per base box.

## Will Build 500-Ton Stack Along American Lines

A blast furnace plant including a 500-ton stack is to be built at Pretoria, South Africa. The contract for this plant, complete with auxiliaries, was placed by the South African Iron & Steel Industrial Corp. with Ashmore, Benson, Pease & Company, Ltd., Stockton-on-Tees, England, who are the British associates of Freyn Engineering Co., Chicago. This order was obtained in the face of keen competition from European engineers and manufacturers.

# Structural Shapes

**Award and Inquiry Decline More Pronounced—4900-Ton Office Building at Washington Reported Let—Chicago Contemplates 80,000 Tons of Business Soon**

STRUCTURAL SHAPE PRICES, PAGE 87

**New York**—Structural lettings and new inquiry are easing off. This became apparent about the middle of November. While pending tonnage still is heavy, the bulk of old business has been placed. With few exceptions, several large projects may not be placed before the first of the year. Prices are firmer with 1.885c, New York, more in evidence, or 1.70c, Bethlehem. Some business is reported to have been done at 1.93c from Pittsburgh, equivalent to 1.60c, f.o.b., that point.

**Boston**—A little more than 600 tons of structural shapes was awarded here last week, including 350 tons for a House of Correction building, Billerica, Mass., and the L street bath house, here, 255 tons.

**Philadelphia**—A firmer tone continues to be reflected in structural shapes with mills generally holding 1.70c, base, eastern mills, on plain standard shapes subject to the usual freight rate equalization. Fabricated prices, however, have not yet shown improvement and on one large project of built up plate girder type construction on which bids were opened here the past week the lowest price was 2.36c per pound, f.o.b. cars Philadelphia, based on 2.17c at the fabricating points. Eastern shape mills are not operating more than 50 per cent.

**Pittsburgh**—Demand for plain structural material continues to decline seasonally. Awards also are smaller than a month ago with new inquiry devoid of large individual jobs. The market is held at 1.60c, Pittsburgh, on current tonnage with announcement lacking on the first quarter price.

**Buffalo**—The general contract for the grade elimination work at Lackawanna, N. Y., 2240 tons of structural and about 250 tons of concrete bars, went to Gahagan Construction Co., Brooklyn, N. Y.

**Cleveland**—Construction programs largely have halted in this area with a corresponding falling off in demand for structural material. Practically the only inquiry out locally is for a 500-ton school. A larger school tonnage is about to be placed—John Marshall high school—through Crowell & Little Construction Co. Kilroy Structural Steel Co. is understood to be low. A theater and office building up for bids in Mansfield, O., will take between 500 and 750 tons, it is estimated.

**Chicago**—Inquiries for light shapes for 1931 railroad maintenance and bridge work and small-lot building projects constitute a total of about 25,000 tons now active. Reports of fresh structural inquiry are noted, some estimates being that 80,000 tons will be out within 30 days. Current schedules are week-to-week, with frequent roll changes and disagreeable operating conditions. Efforts are being made to obtain an additional $1 to $2 for mixed carload lots, but the base price for plain material is quoted 1.70c, mills.

Chicago board of education will let contracts for five junior high schools, one high school addition and an elementary school before Jan. 1. These will cost about $8,000,000 and take about 10,000 tons of shapes.

**Birmingham, Ala.**—Shape business held to the level of the preceding week. Bids are in on several thousand tons of bridge and other engineering work. Small contracts are numerous. Highway construction with bridges in the South promises much tonnage.

## Contracts Placed

5475 tons, instead of 5000 tons, Ohio river bridge at Evansville, Ind., to American Bridge Co., Pittsburgh; listed in STEEL of Nov. 20.

4900 tons, House of Representatives office building, Washington, reported placed with American Bridge Co., Pittsburgh.

## Awards Compared

| | Tons |
|---|---|
| **Awards this week** | **27,370** |
| **Awards last week** | **35,037** |
| **Awards two weeks ago** | **29,042** |
| **Awards this week in 1929** | **24,403** |
| **Av. weekly awards, 1930** | **35,526** |
| **Av. weekly awards, 1929** | **42,213** |
| **Av. weekly awards, Nov.** | **33,202** |
| **Tot. awards to date, 1929** | **2,017,381** |
| **Tot. awards to date, 1930** | **1,740,757** |

4000 tons, building, First National Bank & Trust Co., Oklahoma City, Okla., to unstated fabricator.

3770 tons, hotel, Central Park south, New York, to Taylor-Fichter Steel Construction Co., New York; H. K. Ferguson Co., Cleveland, general contractor; erroneously reported last week as going to Fort Pitt Bridge Works Co., Pittsburgh.

2000 tons, Riverside station, Minneapolis, to Minneapolis Steel & Machinery Co., Minneapolis.

1700 tons, bridge work for Great Northern railroad, to American Bridge Co., Chicago.

1090 tons, apartment, 2 Horatio street, New York, to Taylor-Fichter Steel Construction Co., New York.

1000 tons, furnace supports and binding, Wisconsin Steel Co., South Chicago, Ill., to Wisconsin Bridge & Iron Co., North Milwaukee, Wis.

1000 tons, open-hearth furnace building for Wisconsin Steel Co., South Chicago, Ill., to American Bridge Co., Chicago.

975 tons, apartment, Riverside drive and 104th street, New York, to Lehigh Structural Steel Co., Allentown, Pa.; Boak & Paris, architects.

950 tons, Bing & Bing apartment, East Twenty-eighth street, New York, to Harris Structural Steel Co., New York.

900 tons, school No. 103, Bronx, N. Y., to Easton Structural Steel Co., Easton, Pa.; Royal-Rice Co., general contractor.

800 tons, vaiduct over Illinois Central tracks, La Grange, Ill., to Gage Structural Steel Co., Chicago.

800 tons, apartment, 59 West Twelfth street, New York, to Harris Structural Steel Co., New York.

635 tons, apartment, 12 East Sixty-eighth street, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.

500 tons, bridge work for Iowa highway commission, divided among Clinton Bridge Works, Clinton, Iowa, Rock Island Bridge & Iron Works, Rock Island, Ill., and Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

500 tons, apartment, 16 Washington place, New York, to Eastern Structural Steel Co., Easton, Pa.

450 tons, addition St. Vincent's hospital, New York, to unstated fabricator; Frank O'Hare Co., general contractor.

411 tons, sausage factory, Havana, Cuba, for Swift & Co., Chicago, to Belmont Iron Works, Philadelphia.

375 tons, Bing & Bing apartment, Riverside drive and Seventy-fourth street, New York, to Lehigh Structural Co., Allnetown, Pa.; Boak & Paris, architects.

350 tons, highway bridge, Frederick county, Md., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

350 tons, House of Correction, Billerica, Mass., to Boston Structural Steel Co., Cambridge, Mass.

273 tons, 3-story residence, 54 to 58 East Ninety-third street, New York, to National Bridge Works, Long Island City, N. Y.

261 tons, Hotel Shell Drake, San Francisco, to Judson-Pacific Co., San Francisco.

260 tons, highway bridge at Henderson, Minn., to unstated fabricator.

255 tons, L street bath-house, Boston, to A. L. Smith Iron Works, Chelsea, Mass.

250 tons, Electric Realty building, Philadelphia, to Shoemaker Bridge Co., Pottstown, Pa.

240 tons, apartment, Santa Monica, Calif., to McClintic-Marshall Co., Los

Angeles.
200 tons, apartment, 2337 Ocean avenue, Brooklyn, N. Y., to Stanley Iron Works, Brooklyn.
200 tons, apartment, St. John's place, Brooklyn, N. Y., to Gold Seal Iron Works, Brooklyn.
180 tons, tunnel supports, tunnel No. 2, New York, to American Car & Foundry Co., Depew, N. Y.
180 tons, school, Tuxedo Park, New York, to John J. Cook Co., Clifton, N. J.
175 tons, additional for city light plant, Pasadena, Calif., to McClintic-Marshall Co., Los Angeles.
170 tons, highway bridge, Hokah, Minn., to Worden-Allen Co., Milwaukee.
170 tons, apartment, Cortelyou road, Brooklyn, N. Y., to Gold Seal Iron Works, Brooklyn.
125 tons, school, Hillside, N. J., to Passaic Iron Works, Passaic, N. J.
120 tons, warehouse, W. J. Holliday Co., Hammond, Ind., to the Austin Co.
100 tons, additional for dock works at New Orleans, to Virginia Bridge & Iron Co., Birmingham, Ala.
100 tons, school, Summit, N. J., to Arny Steel Construction Co., Elizabeth, N. J.

## Contracts Pending

8000 to 10,000 tons, five junior high schools, one high school addition, one elementary school for Chicago board of education; orders expected before Dec. 31.
8000 tons, transmission towers, Super Power Co. of Illinois, for Powerton-Crawford line.
4300 tons, Market street viaduct, Pennsylvania railroad, Philadelphia; American Bridge Co., low.
2700 tons, highway bridge, Mt. Carmel, Ill.
2500 tons, three apartments for Bing & Bing, New York, awarded to unstated fabricators but contracts not yet signed.
2500 tons, state capitol building, Baton Rouge, La.
2240 tons, grade elimination, Lackawanna, N. Y.; general contract to Gahagan Construction Co., Brooklyn, N. Y.
1800 tons, bank and office building, Des Moines, Iowa.
1400 tons, steamship pier, Baltimore.
1000 tons, seawall and breakwater, Selfridge Field, Mt. Clemens, Mich., for United States government; general contract to Culbertson & Kelly Co., Detroit.
1000 tons, office building, Dallas Gas Co., Dallas, Tex.; general contract to Jopling Construction Co., Dallas.
787 tons, Pulga river bridge, Sacramento, Calif.; bids received.
750 tons warehouse at Detroit, Firestone Tire & Rubber Co., Akron, O.; general contract to Otto Misch Co., Detroit.
600 tons, federal penitentiary, Lewisburg, Pa.
500 tons, James Ford Rhodes high school, Cleveland; bids Dec. 12.
500 to 750 tons, estimated, theater and office building, Mansfield, O.; bids asked.
500 tons, repairs, McComb Dam bridge for city of New York, Bronx, N. Y.
400 tons, New York state college of forestry, Syracuse, N. Y.
375 tons, Huron street bridge at Berlin, Wis.; bids close Dec. 11.
300 tons, high school, Port Chester, N. Y.
200 tons, bank building, Pensacola, Fla.
170 tons, Musconetcong river bridge, New Jersey.
100 tons or more, employes' home, Dannemora, N. Y., state hospital, John Johnson Construction Co., Buffalo, low with $114,810.
Unstated tonnage, city hall, Kalamazoo, Mich.; bids due Dec. 1; Albert Ten Buschen, city manager; Weary & Alford, Chicago, architects.
Unstated tonnage, $750,000 building for Spokane & Eastern Trust Co., Spokane; bids on general contract open Dec. 4.
Unstated tonnage, 13 bridges, Reading railroad.
Unstated tonnage, four state highway bridges near Strong, Ark., on highway No. 2; general contract to Gauger-Korsmo Construction Co., Memphis, Tenn.
Unstated tonnage, $800,000 replacement program at Scott Field, St. Louis; bids on barracks and officers' quarters to be advertised for by Col. John A. Paegelow, commanding officer.

# Concrete Bars

**Seasonal Decline More Precipitate—Large Volume of Inquiry Pending—Engineering Projects in New York to Take 8000 Tons—Prices Appear to Be Holding**

REINFORCING BAR PRICES, PAGE 87

**New York**—Concrete reinforcing bar prices hold firm at 2.35c, New York delivered, 20 tons and over for cut length and 1.70c, Pittsburgh, for uncut. Lettings have slumped slightly although pending volume holds up. Subways, bridges, sewers and highway tonnages are seasonally large. Private buying, however, has declined. Engineering work in this section on which bids are in or about to be taken totals between 7000 and 8000 tons.

**Boston**—Concrete bar awards aggregated the highest of any week in several past, possibly 1500 tons being let. The largest was the 540-ton hospital at Springfield, Mass., going to Kalman Steel Co. Truscon Steel Co. was awarded 320 tons for a sewage disposal plant at Providence, R. I. Prices are slightly firmer.

**Pittsburgh**—Reinforcing bar demand continues to decline seasonally. November tonnage was off from that of October but compared not unfavorably with that of a year ago. Local awards include 400 tons for bridge work. Inquiry is quiet.

**Cincinnati**—Early awards are anticipated here for several federal reformatory buildings at Chillicothe, requiring 700 tons of reinforcing bars. Bids were opened in Washington.

**Chicago**—Reinforcing bar awards are in small lots, while inquiries are fairly good. From 300 to 400 tons are expected for two schools in Chicago. Bids will be received Dec. 9 for the 200-ton bridge over the Wabash river at Mt. Carmel, Ill. A rail steel bar mill is down for 30 days for installation of new equipment. Billet bars are 1.70c to 1.80c.

## Awards Compared

| | Tons |
|---|---|
| Awards this week | 5,140 |
| Awards last week | 15,710 |
| Awards two weeks ago | 6,505 |
| Awards this week in 1929 | 4,010 |
| Av. weekly awards, 1929 | 5,849 |
| Av. weekly awards, 1930 | 7,201 |
| Average weekly awards Nov. | 8,752 |
| Total awards to date, 1929 | 293,554 |
| Total awards to date, 1930 | 352,872 |

## Contracts Placed

2000 tons, Burrard street bridge, Vancouver, B. C., to unstated interest; Hodgson, King & Marble, and Dawson, Wade & Co. Ltd., Vancouver, general contractors.
900 tons, building, Westchester Development Co., Washington, to Rosslyn Steel & Cement Co., Washington.
540 tons, hospital, Springfield, Mass., to Kalman Steel Co., Chicago.
320 tons, sewage disposal plant, Providence, R. I., to Truscon Steel Co., Youngstown, O.
300 tons, substructure, South Tenth street bridge, Pittsburgh, to McClintic-Marshall Co., Pittsburgh; Vang Construction Co., general contractor.
250 tons, high school, Jamaica Plain, Boston, to Northern Steel Co., Boston.
200 tons, county institution, Billerica, Mass., to Northern Steel Co., Boston.
120 tons, Walworth Run bridge, Allegheny county, Pa., to Carlem Engineering Co., Pittsburgh.
110 tons, Tunnel for Pilgrim State hospital, Long Island, N. Y., to Kalman Steel Co., Chicago.
100 tons or more, high school, Rayville, La., to Connors Steel Co., Birmingham, Ala.; W. Murray Werner, Rayville, general contractor.
100 tons, junior high school building, Hartford, Conn., to Truscon Steel Co., Youngstown, O.
100 tons, undercrossing, Westchester County Park commission, New

(*Concluded on Page 95*)

# Strip

**Lethargic Condition Holds Market Steady with Small Demand—Some Shading Done**

STRIP PRICES, PAGE 87

**Pittsburgh**—Strip specifications involve only small lots, with improvement lacking in total tonnage. Requirements of the automotive industry are fairly steady, reductions by some interests being offset by demand for new models. First quarter contracting is slow. Cold-rolled strip is usually quoted 2.35c, but 2.25c is applied on larger lots. Hot strip continues 1.65c to 1.70c for narrow material and 1.55c to 1.60c for wide strip. Mill operations hold around 30 per cent for hot mills and 20 to 25 per cent for cold mills.

**Worcester, Mass.**—Running true to past performances, November was the worst month of a bad year, although December orders for January delivery are expected to revive the market. A quotation of 2.25c, base, Pittsburgh, on cold-rolled strip has upset the market. Worcester still is quoting 2.50c to 2.60c.

**New York**—Hot strip prices generally are at 1.55c, Pittsburgh, for wide material and 1.65c for narrow, with mills quoting first quarter at these levels. Cold-rolled strip is at a 2.25c, Pittsburgh, minimum. This price also is being quoted for first quarter. Local demand is sluggish.

**Philadelphia** — Hot-rolled strip usually is 1.60c, Pittsburgh, on widths 6 to 24 inches and 1.70c on widths up to 6 inches, with occasional shading. Hot strip over 24 inches is fairly firm at 1.75c, Pittsburgh, for heavy and 1.90c for light gages. Cold-rolled strip continues at 2.35c, Pittsburgh, with occasional concessions for tonnages.

**Cleveland**—The 2.25c, Cleveland, figure on cold strip is gaining more widespread recognition on 3 tons or more, 2.35c being quoted on smaller lots. Hot is quoted 1.50c to 1.60c, Pittsburgh, on wide, although some have a 1.55c minimum. Narrow is $2 a ton higher. Releases on hot and cold strip show no expansion. Buyers take small lots for absolute needs. Due to the fact that pillar posts on Chevrolet bodies now are made of hot-rolled pickled strip steel, demand for cold strip locally is more restricted than ever. It is understood only three parts on this particular body are made of cold strip.

**Chicago**—A few first quarter contracts for cold-rolled strip have been signed on the basis of 2.35c, Pittsburgh-Cleveland. Automotive business is equivalent to the last three weeks.

## Operations Continue Fall at Pittsburgh and Valley

**Youngstown, O.**—Steel plant activity showed a further decline this week, tapering three points to 43 per cent of capacity. This compares with 46 last week, 52 two weeks ago and 57 per cent in corresponding week of 1929. Reduced sheet mill operations by Republic Steel Corp. and Sharon Steel Hoop Co. accounted in part for the decline. Despite a year of subnormal operations, the usual late December decline, to holidays, inventories and seasonal influences, apparently is appearing several weeks earlier than usual. Republic Steel operations are at 45 per cent of capacity, off five points. Sharon Steel Hoop Co. is also at 45 per cent, a loss of 15 points from last week. Youngstown Sheet & Tube Co. schedule is unchanged at 40 per cent and Newton Steel Co.'s at 50 per cent. Empire Steel Corp. plants here again are idle. Open-hearth production is barely 25 per cent, with schedules uncertain and liable to change before the end of the week. Sheet output for the week should range from 35 to 40 per cent if increased schedules expected later in the week develop. Republic Steel has started eight sheet mills at Niles, O. This has not affected its general 45 per cent rate.

**Philadelphia**—Eastern mills' ingot operations are not over 40 per cent capacity. Plate mills are at 40, shape mills at approximately 50 per cent.

**Pittsburgh**—Ingot output is lower at below 40 per cent which compares with 45 per cent last week. Sheet production has declined to 35 to 40 with tin plate continuing 40 to 45. Strip holds about 30 with pipe off at 35 to 40.

**Buffalo**—District steel works have reduced their operations from last week's 46 per cent to 40 per cent of capacity. Production schedules at or near this rate are expected for the first half of the month, followed by the usual holiday curtailment.

**Cleveland**—Ingot production continues unchanged at the rate of the past two weeks with 15 open hearths pouring, 11 of which are independents, for a district rate of 44 per cent capacity. Corrigan, McKinney Steel Co. operates six.

**Chicago** — Steel production as measured by open-hearth activity is 45-47 per cent, virtually unchanged from a week ago. Steelworks blast furnaces active number 14 of 36. Rail mill operations have been stepped up a few points to 30 to 35 per cent.

**Birmingham, Ala.**—Steel mill operations for the district remains at an estimated 43 per cent. Nine open-hearth furnaces are on ingots. Sheet mills still lead with plates and structural shapes following.

## Warehouse Demand Shows Signs of Seasonal Easing

Warehouse Prices, Page 109

**New York**—Jobbing demand is steady at the restricted rate that has prevailed over the past several weeks. In fact, November held up better than was generally expected by the trade. Approaching holiday and inventory season is expected to cause declines this month. Prices are unchanged, with few outstanding orders to afford a test.

**Boston**—Following a lapse of activity for a fortnight in November, warehouse interests are again noting a slight pick up resulting from a number of small jobs. Continued open weather has been an aid to this development. Prices hold firm.

**Philadelphia**—Jobbers report continued slow demand, prices unchanged and fairly firm.

**Pittsburgh**—Orders are in smaller lots and reflect the usual seasonal curtailment in industrial requirements. Prices are unchanged with occasional shading noted in the flat rolled products.

**Cleveland**—Demand for iron and steel out of warehouse in this district continues unchanged. Orders are in moderate volume, but involve only small tonnages. Prices are nominally unchanged with concessions a shade more common.

**Cincinnati**—Slight contraction in volume in November, as compared to October, was noted by some warehouse interests. Any upturn in demand during December would surprise the trade. Prices are steady.

**Chicago**—Warehouse sales are unchanged from November. Sheet jobbing is light, but hot-rolled bar products are fairly active. Prices remain unchanged.

**St. Louis**—Warehouse interests in this district report business fair, though still spotted. There is still a steady call for materials for outdoor engineering projects.

## Concrete Awards

(*Concluded from Page* 91)

York, to Concrete Steel Co., New York.

100 tons, sea wall and breakwater off Grant Park, Chicago, to unstated fabricator.

## Contracts Pending

1000 tons, three highway construction projects, White Plains and New Rochelle, N. Y.; bids being taken.

860 tons, Olympic club, San Francisco; bids received.

700 tons, several buildings, federal reformatory, Chillicothe, O.; bids opened in Washington.

600 tons, No. 3 intercepting sewer for Chicago sanitary district; general contract to the Ryan Co.

250 tons, grade elimination at Lackawanna, N. Y.; general contract to Gahagan Construction Co., Brooklyn, N. Y.

205 tons, bridge over Wabash river, Mt. Carmel, Ill.; bids Dec. 9.

159 tons, paving in Santa Barbara county, Calif.; bids Dec. 17.

150 tons, post office, Fall River, Mass.

125 tons, office building, Dallas Gas Co., Dallas, Tex., general contract to Jopling Construction Co., Dallas.

100 tons, apartment, Menlo street, Los Angeles; bids being received.

100 tons, hospital, Somerville, Mass.

Unstated tonnage, two schools in Chicago.

Unstated tonnage, $162,000 hotel at Union City, Tenn.; Meers & Wallenta, 63 South Third street, Memphis, Tenn.; low bidders on general contract.

## Extra Dividend Is Exception Among Reports

McKeesport Tin Plate Co., McKeesport, Pa., directors have declared an extra dividend of 50 cents a share in addition to regular quarterly dividend of $1 on the common stock, both payable Jan. 2 to holders of record Dec. 15.

□ □ □

Otis Steel Co., Cleveland, has declared the regular quarterly dividend of $1.75 a share on prior preferred stock, but omitted the dividend on common stock. The company had been paying 62½ cents a share quarterly on common.

□ □ □

Directors of Republic Steel Corp., Youngstown, O., have deferred action on the preferred dividend until the December meeting.

□ □ □

Michigan Steel Corp., Detroit, will convene a special stockholders' meeting Dec. 22 to vote on the proposed sale of the corporation's assets to National Steel Corp., Pittsburgh, and the immediate distribution of the proceeds to Michigan Steel stockholders.

□ □ □

Wickwire Spencer Steel Co., Buffalo, has extended time until Jan. 15 for deposit of various securities affected by the reorganization committee, under which plan more than 77 per cent of the bonds, 84 per cent of class A and 86 per cent of class B notes of the company have been deposited.

□ □ □

Universal Pipe & Radiator Co., New York, reports net earnings for third quarter after all taxes and deductions of $14,426.

□ □ □

Ludlum Steel Co., Watervliet, N. Y., reports loss of $187,673 for quarter ended Sept. 30 against profit of $219,583 before taxes in first nine months of 1929.

□ □ □

Reliance Mfg. Co., Massillon, O., has declared quarterly dividend of 50 cents on common stock, placing it on a $2 annual basis, against $4 paid previously. Directors also voted to set aside $160,000 as a reserve fund from which dividends at the $2 rate can be paid in 1931.

□ □ □

Truscon Steel Co., Youngstown, O., reports net profit of $1,143,760 for nine months ended Sept. 30, equal to $1.44 a share. This compares with $3.39 a share for three quarters on approximately the same number of shares outstanding last year. Third quarter, 1930, earnings were $411,575.

□ □ □

American Locomotive Co., New York, has declared quarterly dividend of 50 cents a share, payable Dec. 31 to record Dec. 12. Previously quarterly dividends of $1 a share were paid on the common issue.

# Pipe

### Cast Grades More Active—Detroit Wants 11,000 Tons—Steel Pipe Seasonally Dull

PIPE PRICES, PAGE 109

**New York**—Cast pipe is more active at firm and unchanged prices, $36 to $37, eastern foundries. Utilities have several thousand tons up for bids. Brooklyn Union Gas has not closed on its recent inquiry. Woodcliff Lakes, N. J., is in the market for 500 tons. Westchester county is taking a good volume of cast pipe in small lots and state work is also more active. Municipal buying is in small lots. Carload shipments are moderately numerous. Utilities will close this month for next half requirements.

**Boston**—About 1000 tons of cast pipe represents awards in the Boston territory the past week. The largest pending item comprises 11 miles of 6 and 8-inch for Hanson, Mass. Bridgewater, Mass., bought 500 tons of 6 and 8-inch, while Salem, Mass., awarded 300 tons.

**Pittsburgh**—Depletion of backlogs of line pipe leaves the market for steel tubular products in nearly as quiet a condition as other finished steel. Demand for standard pipe is seasonally light and oil country goods are dull. Smaller sizes of tubing are quiet and new buying of line pipe is lacking. Mill operations are lower at 35 to 40 per cent.

**Cleveland**—A portion of the pipe, several carloads, for the Higbee Co. department store here, went to a valley producer. Plumbing and heating pipe orders have yet to be placed. Jobber demand for pipe is low confined to an occasional carload.

**Chicago**—Inquiry for 11,000 tons of 24 to 36-inch cast pipe for Detroit provides one of the outstanding projects of the year in this territory. Duluth rejected bids on 1500 tons of 4 to 16-inch cast pipe, and will re-advertise. About 700 tons of private work has been placed in small lots. Important utility inquiries are taking form. Chicago delivered prices for 6 to 24-inch are $45.20 to $46.20.

**Birmingham, Ala.**—Cast pipe lettings are less heavy in the aggregate than was expected for this time. Shipments are steady. Trade authorities state that buying has held more actively into the winter season than was anticipated. Inquiry is especially active for large diameter pipe. Pipe construction slated for next spring may be hurried for this winter to relieve unemployment. Prices are unchanged.

## Contracts Placed

550 tons, 33,200 lineal feet of DeLavaud pipe for Vancouver, B. C., to Evans, Coleman & Evans, Vancouver.

500 tons, 6 and 8-inch cast pipe for Bridgewater, Mass., to United States Pipe & Foundry Co., East Burlington, N. J.

400 tons, 8 to 16-inch cast pipe for Manchester, N. H., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

380 tons, 16-inch cast pipe for Salem, Mass., to Donaldson Iron Co., Emaus, Pa.

225 tons, 6 to 12-inch cast pipe for Brentwood, Long Island, N. Y., to

# Reliability

*An institution which places such high importance on human relationships that it consistently retains its old associations is certain to enjoy a wide reputation for dependability*

UNION DRAWN STEEL CO.

Warren Foundry & Pipe Co., Phillipsburg, N. J.
200 tons, 4000 lineal feet of 14-inch cast pipe for Vancouver, B. C., to Leith, Murray & Co. Ltd., Vancouver, for English pipe.
100 tons or more of cast pipe for Newton, N. J., to R. D. Wood & Co., Florence, N. J.

## Contracts Pending

11,000 tons, 24, 30 and 36-inch cast pipe for Detroit; bids in.
3336 tons, 8 and 12 inch class 150 cast pipe for Los Angeles; bids received.
1500 tons, 4 to 16-inch cast pipe for Duluth; previous bids rejected and project being readvertised.
500 tons, 6 and 8-inch cast pipe for Woodcliff Lakes, N. J.
175 tons, 6 and 8-inch cast pipe for Norwood, Mass.; Donaldson Iron Co., Emaus, Pa., low bidder.
170 tons, 3 to 12-inch cast pipe for Credemore division, Brooklyn state hospital, Brooklyn, N. Y.
165 tons, 6 to 12-inch cast pipe for Wassaic, N. Y.; bids in.
135 tons, 2-inch cast pipe for Long Beach, Calif.; bids Dec. 4.
125 tons, 24-inch cast pipe for Hudson, N. Y.
100 tons, 6 to 12-inch cast pipe for Kings Park. Long Island, N. Y.
Unstated tonnage, 11 miles of 6 and 8-inch cast pipe for Hanson, Mass.; bids close Dec. 5.

## Semifinished Quiet; Sheet Bars Easier

**Semifinished Prices, Page 98**

**Pittsburgh**—Semifinished steel is in a nominal market as regards large lots. Small tonnages of rerolling billets, slabs and sheet bars usually command $31, but poor demand is providing no test of the market on larger lots. Producers of wire rods now are willing to take first quarter contracts at $36. Forging billets continue the same figure.

**Philadelphia** — Billet business is moderate. Rerollers are $31, Pittsburgh, and forging $36.

**Cleveland**—The leading local merchant producer of sheet bars, billets and slabs continues operating six of its 14 open hearths. While quotations continue nominally $31, base, Cleveland and Youngstown, it is understood sheet bars are offered at $30.

**Youngstown, O.**—Since a number of independent nonintegrated sheet and strip mills in eastern Ohio have closed temporarily semifinished steel business is in the doldrums. Billets, sheet bars and slabs continue to be quoted $31, Youngstown and Pittsburgh.

**Chicago** — Shipments of semifinished steel have dropped with the close of lake navigation. Sales are light and prices are nominal at $32, Chicago, for 4 x 4-inch re-rolling billets.

# Wire

**Some First Quarter Contracts Being Taken at Current Prices —Light Tonnage Is the Rule**

**WIRE PRICES, PAGE 87**

**Chicago**—Occasional wire products orders for first quarter are being booked. This includes commitments for several purchasers of manufacturers' wire. All tonnage dropped slightly from a week ago, due to weather and the holiday. Dealer buying of common wire products has dropped sharply, while jobber sales are fair. Prices remain unsettled, but manufacturers' wire is quoted 2.35c, Chicago or western mills.

**New York**—Nail prices are at $1.90, Pittsburgh, minimum, a price that has now been rather generally accepted for first quarter. Similarly, 2.30c, Pittsburgh, rules on plain bright wire. Buying remains small.

**Worcester, Mass.**—November shipments show a falling off from October, though demand remains about the same. Demand is in small orders. Sentiment is general that the bottom has been reached, however. Plain bright wire to dealers is 2.40c, base, Worcester.

**Philadelphia** — Wire nails are steady at $1.90, Pittsburgh. Plain steel wire is 2.25c to 2.30c, Pittsburgh, with occasional concessions.

**Pittsburgh**—Producers of wire products are taking first quarter contracts on the basis of recent prices of $1.90 to jobbers for wire nails, 2.30c for plain wire and $36 for wire rods. A stiffening in prices had been looked for in some quarters but it failed to materialize. Incoming tonnage continues light, with demand for most products off slightly since a month ago. Activity in manufacturers' wire reflects quiet in general industrial operations.

**Cleveland**—Ordering of wire and wire products holds at an unchanged rate. Shipments in November were at the October pace. Though annual inventories approach, orders have not measurably been decreased as stocks and orders have been at a minimum for some time. An example is a local consumer whose normal stocks of wire average 1800 tons and who now maintains a 200-ton balance. Nails are $1.90 to $2 a keg, plain wire is 2.30c, spring wire is 3.30c. In semifinished wire rods are firm at $36 a ton, Pittsburgh, and customers are not asking for less. Interest in first quarter on some wire products is not general and prices have been named on only a few.

Industrial Pattern & Engineering Co., Muskegon Heights, Mich., has increased its capital from $50,000 to $100,000 and 5000 shares no par value.

## Bolt, Nut, Rivet Tonnage Is at Low for Year

**Bolts, Nuts, Rivets Prices, Page 87**

**Pittsburgh** — Specifications for bolts, nuts and rivets are near the lowest level of the year, November tonnage showing a small decrease from that of October. First quarter contracts are not due for a week or two. The market continues 73 off for bolts and nuts and 2.75c, Pittsburgh, for structural rivets. Operations hold around 40 per cent.

**New York**—Bolt and nut manufacturers generally look for continuance of the 73 off discount on bolts and nuts for first quarter. The outlook on rivets is less certain, with some definite announcement expected around Dec. 10. Meanwhile, rivets are 2.75c, Pittsburgh. Contracting is light, with eastern mills operating at 40 to 45 per cent.

**Philadelphia**—Indications are that December will be a good month in bolts and nuts, due to the usual buying for trackwork. The New York Shipbuilding Co. has some inquiry out for bolts. First quarter contracts are being signed for bolts and nuts at the prevailing prices. Rivets continue 2.75c, Pittsburgh, subject to occasional shading on structural rivets.

**Chicago**—First quarter contracting for nuts, bolts and rivets is being started. November shipping orders fell below October, and shipments are about 50 per cent under a year ago. Producer operations are unchanged at 40 per cent. Prices remain at 64 to 73 per cent off for bolts and nuts, 70 to 70, 10 and 5 off for small rivets, and 2.85c for structural rivets in carload lots.

## Bid on Scrap of 45 Ships

Philadelphia—United States Shipping board will open new bids at Washington, Dec. 10, on 45 shipping board vessels now located at New York, Philadelphia and Norfolk. These vessels have a dead weight tonnage of 365,000,000 tons and are expected when broken up to yield about 110,000 tons of steel scrap.

# Raw Material Prices

## Pig Iron

**Per Gross Ton**

**FOUNDRY, NO. 2**

| | |
|---|---|
| Chicago, furnace | $17.50 |
| Pittsburgh, district fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Valley, furnace | 17.00 |
| Cleveland fur., local del. | 17.50 |
| Philadelphia, delivered | 18.26 to 18.76 |
| Virginia, furnace | 17.75 |
| Granite City, Ill., fur. | 17.50 |
| Buffalo, fur., local del. | 17.50 |
| Buffalo, del. Boston | 21.41 to 21.91 |
| Buff., all-rail, Brooklyn | 20.41 to 20.91 |
| Buff., all-rail, Newark | 18.78 to 19.28 |
| Ala., Bir. fur., local del. | 14.00 |
| Alabama, del. Chicago | 17.01 to 17.51 |
| Alabama, del. St. Louis | 16.42 |
| Alabama, del. Cincinnati | 15.19 to 16.19 |
| Alabama, del. Cleveland | 16.51 to 17.51 |
| Ala., Phila., dock del. | 16.75 to 17.25 |
| Ala., Balt., dock del. | 16.50 to 17.00 |
| Alabama, New York dock | 16.50 |
| Ala., Boston dock del. | 17.25 |
| Tenn., Bir. base, local del. | 14.00 |
| Tennessee, del. Cin. | 15.19 to 16.69 |
| Montreal, delivered | 23.50 |
| Toronto, delivered | 22.10 |

**FOUNDRY, NO. 2X**

| | |
|---|---|
| Buffalo, fur., local del. | 18.00 |
| Buff., all-rail, Brooklyn | 20.91 to 21.41 |
| Buffalo, all-rail Newark | 19.28 to 19.78 |
| Buffalo, del. Boston | 21.91 to 22.41 |
| Virginia furnace | 18.25 |
| Eastern, del. Phila. | 18.76 to 19.26 |

**FOUNDRY, NO. 1X**

| | |
|---|---|
| Buffalo fur., local del. | 19.00 |
| Eastern, del. Phila. | 19.26 to 19.76 |

**MALLEABLE**

| | |
|---|---|
| Chicago, furnace | 17.50 |
| Cleveland fur., local del. | 17.50 |
| Pittsburgh district fur. | 18.00 |
| Pittsburgh, delivered | 18.63 to 19.13 |
| Valley furnace | 17.50 |
| Buffalo fur., local del. | 18.00 |
| Eastern Penna., delivered | 19.26 to 20.91 |
| Granite City, Ill., fur. | 17.50 |
| Montreal, delivered | 24.00 |
| Toronto, delivered | 22.60 |

**BASIC**

| | |
|---|---|
| Pittsburgh dist. fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Eastern Penn., del. | 17.50 to 18.00 |
| Buffalo fur., local del. | 17.00 |
| Montreal, delivered | 20.50 |
| Valley furnace | 17.00 |

**BESSEMER**

| | |
|---|---|
| Valley furnace | 17.50 |
| Pittsburgh, delivered | 18.63 to 19.13 |
| Pittsburgh, furnace | 18.00 |

**LOW PHOS.**

| | |
|---|---|
| Valley fur., standard | 27.00 |
| Philadelphia, standard | 24.76 to 28.79 |
| Furnace, copper-bearing | 23.00 to 23.50 |

**GRAY FORGE**

| | |
|---|---|
| Valley furnace | 16.50 |
| Pittsburgh district fur. | 17.00 |
| Pittsburgh, delivered | 17.63 to 18.13 |

**CHARCOAL**

| | |
|---|---|
| Lake Superior, del. Chicago | 27.04 |

**SILVERY**

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

**BESSEMER FERROSILICON**

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14 $31; 15—$33; 16—$35.

## Coke

**Prices Per Net Tons**

**Beehive Ovens**

| | |
|---|---|
| Connellsville furnace | $2.50 to 2.60 |
| Connellsville foundry | 3.50 to 4.85 |
| New River foundry | 6.00 |
| Wise county foundry | 4.25 to 5.00 |
| Wise county furnace | 3.50 to 4.25 |

**By-Product Foundry**

| | |
|---|---|
| Newark, N. J., del. | $9.00 to 9.40 |
| Chicago ovens | 8.00 |
| New England, del. | 11.00 |
| St. Louis, del. | 9.00 |
| Birmingham ovens | 5.00 |
| Indianapolis, del. | 8.25 |
| Ashland, Ky., ovens, Connell. basis | 5.50 |
| Portsmouth, O., ovens, Connell. basis | 5.50 |
| Buffalo ovens | 8.00 to 8.50 |
| Detroit, ovens | 8.50 |
| Philadelphia, del. | 9.00 |

## Iron Ore

**LAKE SUPERIOR ORE**

**Gross Ton, 51½%, Lower Lake Ports**

| | |
|---|---|
| Old range bessemer | $4.80 |
| Mesabi bessemer | 4.65 |
| Old range nonbessemer | 4.65 |
| Mesabi nonbessemer | 4.50 |
| High phosphorus | 4.40 |

**EASTERN LOCAL ORES**

**Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces**

| | |
|---|---|
| Foundry and basic, 56 63%, contract | 10.00 |
| Copper-free low phos. 58-65% | nom. |

**FOREIGN ORE**

**Cents per units, alongside docks Atlantic ports**

| | |
|---|---|
| Foreign manganiferous ore, 45-55% iron, 6-10% manganese | 11.00 |
| North African low phosphorus | 10.00 |
| Swedish basic, 65% | 9.00 |
| Swedish low phos. | 10.00 |
| Spanish, North African basic, 50 to 60% | 9.00 |
| Newfoundland fdy., 55% | 9.00 |
| Tungsten, spot and future short ton unit, duty paid | $12.50 |
| Chrome ore, 48% net ton c.i.f. | $21.50 to 22.50 |

## Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

| | |
|---|---|
| Caucasian, 52-55% (nom.) | 27 to 28 cents |
| Indian, 48-50% (nom.) | 27 to 28 cents |
| Brazilian, 46-48% (nom.) | 25 cents |

## Refractories

**FIRE CLAY BRICK**

**Per 1000 f.o.b. Works**

**First Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | $43.00 |
| Georgia, Alabama | 40.00 to 47.00 |

**Second Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | 35.00 to 38.00 |
| Georgia, Alabama | 30.00 to 35.00 |

**SILICA BRICK**

| | |
|---|---|
| Pennsylvania | 43.00 |
| Joliet, Ill., East Chicago, Ind. | 52.00 |
| Birmingham, Ala. | 50.00 to 51.00 |

**MAGNESITE BRICK**

**Per Net Ton**

| | |
|---|---|
| 9 x 4½ x 2½ | 65.00 |

**MAGNESITE**

| | |
|---|---|
| Dead burned grain, net ton, Chester, Pa., or Baltimore bases | 40.00 |
| Domes, Chewelah, Wash., base | 22.00 |

**CHROME BRICK**

| | |
|---|---|
| Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½ | 45.00 |

## Semifinished Steel

**Prices Per Gross Ton**

**BILLETS AND BLOOMS**

**4 x 4-inch base**

| | |
|---|---|
| Pittsburgh, open-hearth | $31.00 |
| Pittsburgh, bessemer | 31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |
| Philadelphia | 36.30 |
| Chicago | 32.00 |
| Forging, Chicago | 37.00 |
| Forging, Pittsburgh | 36.00 |
| Forgings, Philadelphia | 41.30 |

**SHEET BARS**

| | |
|---|---|
| Pittsburgh | $31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |
| Chicago | 32.00 |

**SLABS**

| | |
|---|---|
| Pittsburgh | $31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |

**WIRE RODS**

| | |
|---|---|
| Pittsburgh, Cleveland | $36.00 |
| Chicago | 37.00 |

**SKELP**

| | |
|---|---|
| All grades, Pittsburgh | 1.60c |

## Ferroalloys

**(In dollars, except Ferrochrome)**

| | |
|---|---|
| *Ferromanganese, 78-82%, tidewater, duty paid | $99.00 |
| *Ferromanganese, del. Pittsburgh | 103.79 |
| Spiegeleisen, 19-21%, domestic fur. spot† | 30.00 |
| *Ferrosilicon, 50 per cent, freight all., c. l. | 83.50 |
| Do, less carload | 88.50 |
| Do, 75 per cent | 13.00 to 15.00 |
| Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del. | 11.00 |
| Do, for spot delivery | 11.50 |
| Ferrotungsten, stand., lb. cont. | 1.12 to 1.15 |
| Ferrovanadium, 30-40 per cent, per lb., contained, on analysis | 3.15 to 3.65 |
| Ferro-carbon-titanium carload producers' plants, net ton | 160.00 |
| Do, one-ton to c. l. | 170.00 |
| Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent) | 91.00 |
| Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24% | 122.50 |

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

## Fluorspar

**85 and 5 per cent grade**

| | |
|---|---|
| Washed gravel Kentucky and Illinois mines, per net ton | $17.25 |
| Washed gravel, import duty paid east, tide, gross ton | 19.50 |

Automobile Sheets

Metallic Furniture Sheets

Full Pickled Cold Rolled Sheets

Single Pickled Cold Rolled Sheets

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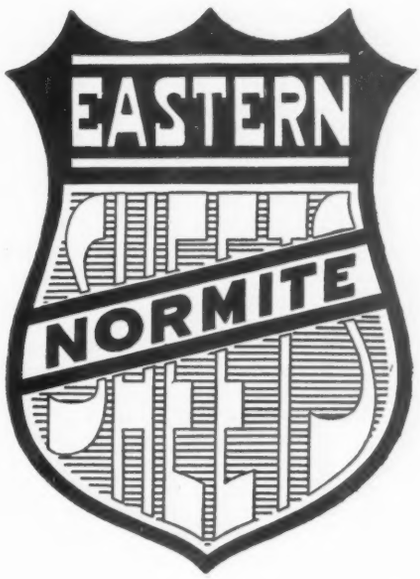


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251 Albany St.

# Pig Iron

**Market More Active—Inquiries for First Quarter Developing in Larger Volume—Price Firmer**

PIG IRON PRICES, PAGE 98

**Pittsburgh**—New business in pig iron and shipments continue slow while a slight improvement is noted in inquiry. Melters are reducing orders as the end of the year approaches. Although November shipments compared favorably with those of October a decline is in prospect for December. Some inquiry is being made to determine prices, with little contracting so far. The Walworth Co. is in the market for first quarter tonnage of foundry and malleable. Current small lot buying is not providing a test of prices which nominally continue $17, valley, for basic and foundry, and $17.50 for bessemer and malleable.

**Boston**—Pig iron sales have declined and a slightly easier price situation has developed. Buffalo No. 2X again is obtainable at $15.50, and the fact is made more pronounced that malleable is obtainable at the same figure. This compares with $16 for malleable and $16.50 for No. 2X in recent weeks. Alabama iron is obtainable at less than $12, base furnace. About 3800 tons of iron was sold in the past week, Mystic Iron Works, Everett, Mass., booking 3000 tons. Mystic Iron Works has leased storage facilities at Kearny, N. J., to provide an outlet in that territory.

**New York**—Pig iron sales again totaled more than 10,000 tons in the week. Inquiry is restricted to about 2000 tons. Buffalo iron is unchanged at $15.50 to $16, furnace, and southern iron at $16.50, delivered New York docks. The Burnham Boiler Corp. has purchased approximately 500 tons for its plants at Lancaster, Pa., and Elizabeth, N. J. The Central Foundry Co. has closed on iron, reported 2000 tons, for Lansdale, Pa., and Baltimore.

**Philadelphia**—Buying is restricted to small and moderate tonnages of foundry iron, a few for first quarter. Foundry iron continues $17.50 to $18, base, eastern Pennsylvania furnace.

**Buffalo**—Another blast furnace here is to be banked this week, reducing to four the number of producing units. This is the smallest number in more than 20 years. Small sales have increased considerably. Inquiry also is larger, but is limited to consumers' requirements for an average of not more than 30 days.

**Youngstown, O.**—Continuance of routine purchases is keeping down the surplus stocks of iron at furnaces. Foundries are operating on intermittent schedules. No. 2 foundry brings $17, furnace, and malleable $17.50.

**Cleveland**—The market is more active and a stronger undertone prevails. Large consumers are obtaining prices for first quarter. The amount on inquiries at the beginning of the week is approximately 20,000 tons. This is reported to be the largest for any week this year. Several melters in Ohio, northern Indiana and Michigan are in the market for 2000-ton lots. While some of the inquiry is tentative, a better volume of business is expected. Sales by furnace interests with headquarters in Cleveland totaled 12,000 tons, slightly less than in the week preceding, holideys cutting in on business. Westinghouse Electric & Mfg. Co. has not yet closed for Cleveland requirements. Minimum prices for delivery from lake furnaces in competitive territory remain on a $16, furnace, base, while Cleveland furnaces continue to quote $17.50, base, for local delivery.

A little more iron from Alabama is noted in the northern Ohio market. Offers at $10.50 to $11.50, base, Birmingham, are equivalent to $16.51 to $17.51, Cleveland, though the iron high in phosphorus has limited use here.

**Cincinnati**—Spot sales during the week totaled slightly more than 1500 tons. Little tonnage buying for the first quarter is noted in this district. An inquiry for 1000 tons of northern iron for the first quarter, and for 200 tons of southern iron for shipment to Louisville, Ky. are reported pending. Sentiment in the market is firmer.

**St. Louis**—Pig iron prices are slightly firmer, makers selling iron in this district having withdrawn recent offers of concessions. Sales are limited mainly to prompt shipments, though steelmakers are preparing to place orders for first quarter requirements. One large interest has been obtaining prices on a considerable tonnage of basic and is expected to close early this month.

**Birmingham**—A better tone is noted in the pig iron market. Consumers report operations will continue at the present rate through December and improve in January. Furnaces have reaffirmed their base price of $14 for local delivery for first quarter, though quoting lower figures on outside business, depending point of delivery.

**Chicago**—More active small tonnage sales of pig iron soon are indicated by inquiries. Several melters having closed for first quarter are adding to their original estimate. The final cargo of boat iron for the season has just arrived from Buffalo, making about 30,000 tons shipped from the East this year. The current shipment is against orders placed earlier in the year by a middle interest. Lake shipments from Duluth and Chicago to a Michigan melter also featured the close of navigation last week. The price of iron here is steady at $17.50, base, Chicago furnace. Southern iron is firmer, recent offers at $10.50, base, Alabama furnace, disappearing.

**Toronto, Ont.**—Sales show a small gain in volume and blast furnace interests expect steady improvement. Inquiries for first quarter are pending. While basic iron has been reduced to $20.50, Montreal, all other prices are unchanged.

## Spiegeleisen Reduced $3 for Domestic Carloads

Ferroalloy Prices, Page 98

**New York**—Domestic spiegeleisen, 19 to 21 per cent, has been reduced $3 a ton, carload lots, to $30, furnace, subject to differentials on quantities. New contract prices on ferromanganese have not yet been announced, the market remaining $99, duty paid, for carloads to 500 tons annually. Demand generally is light.

Tungsten ore is dull, and the nominal price can be shaded in some instances. No new contracts are noted as yet in special alloys, but nickel for next year is unchanged.

**Pittsburgh**—Shipments of ferroalloys continue moderately smaller than a month ago. Activity is confined almost entirely to the movement against contracts. Announcement of the first half price of ferromanganese and spiegeleisen is deferred, the current market continuing $103.79, delivered, for ferromanganese and $44, furnace, for spiegeleisen, both prices applying on small lots. Some moderation also is noted in demand for special ferroalloys since a month ago with prices unchanged.

Copperweld Steel Co., Rankin, Pa., reports export tonnage for nine months surpassing same period of 1929, which was record in the company's history.

# Scrap

**Further Declines from Apparent Bottom—Buying Fails to Appear—Some Grades Scarce**

**Chicago**—More active short coverage in iron and steel scrap has had a further effect in stemming the downward price movement. So spirited has been the activity of shorts that profits have figured little in the coverage. Railroad scrap thus is going higher. Heavy melting steel on one list sold at $10.92, gross, Chicago switching district. Consumer bookings are light and selling quotations remain nominal. Coverage has been active, particularly among sellers of $10.50 heavy melting steel. Some readjustment in recently announced selling prices have resulted in technical declines. Dealer sentiment is more hopeful, and the view is more generally expressed that scrap prices, at least temporarily, are at bottom.

**New York**—Local dealers have re-

# Iron and Steel Scrap Prices

**Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.**

### HEAVY MELTING STEEL

| | |
|---|---|
| Birmingham | 9.50 to 11.00 |
| Boston, dealers | 6.50 to 7.00 |
| Buffalo, No. 1 | 11.25 to 12.00 |
| Buffalo, No. 2 | 9.75 to 10.00 |
| Chicago | 10.00 to 10.50 |
| Cinci., deal. | 10.00 to 10.50 |
| Cleve., No. 1 | 10.50 to 11.00 |
| Cleve., No. 2 | 9.75 to 10.25 |
| Det. No. 1 deal | 9.75 to 10.25 |
| Det., No. 2 deal | 7.00 to 7.50 |
| E. Pa. del. mill | 11.00 to 11.50 |
| N. Y. del. R. R. | 7.50 |
| N. Y. deal. No. 2 | 5.50 |
| N. Y., deal. yd. | 5.50 |
| Pitts., No. 1 | 12.50 to 13.00 |
| St. L. No. 1 sel | 10.50 to 11.00 |
| Federal, Ill. | 9.50 to 10.00 |
| Granite C., Ill. | 9.00 to 9.50 |
| Valleys, No. 1 | 12.50 to 13.00 |

### COMPRESSED SHEETS

| | |
|---|---|
| Buffalo, dealers | 9.75 to 10.00 |
| Chicago | 8.75 to 9.25 |
| Cleveland | 9.00 to 9.50 |
| Detroit, dealers | 9.00 to 9.50 |
| E. Pa. new mat | 10.00 to 10.50 |
| Pittsburgh | 12.50 to 13.00 |
| Valleys | 12.00 to 12.50 |

### BUNDLED SHEETS

| | |
|---|---|
| Buffalo | 8.00 to 8.50 |
| Cinci., deal | 9.25 to 9.75 |
| Cleveland | 7.00 to 7.50 |
| Eastern Pa. | 9.00 |
| Pittsburgh | 10.00 to 10.50 |
| St. Louis | 5.50 to 6.00 |

### SHEET CLIPPINGS LOOSE

| | |
|---|---|
| Chicago | 5.50 to 6.00 |
| Cincinnati | 5.50 to 6.00 |
| Detroit, dealers | 6.50 to 7.00 |
| St. Louis | 5.50 to 6.00 |

### STEEL RAILS SHORT

| | |
|---|---|
| Birmingham | 12.00 to 12.50 |
| Boston, dealers | 5.50 to 7.00 |
| Buffalo | 14.00 to 14.50 |
| Chicago (3 ft.) | 12.00 to 12.50 |
| Chicago (2 ft.) | 12.50 to 13.00 |
| Cinci., deal. | 15.50 to 16.00 |
| Detroit, deal. | 12.50 to 13.00 |
| Pitts. (open-hearth, 3 ft. and less) | 15.00 to 15.50 |
| St. Louis | 13.50 to 14.00 |

### STOVE PLATE

| | |
|---|---|
| Birmingham | 8.50 to 9.00 |
| Boston, con. | 8.00 to 8.50 |
| Buffalo | 9.00 to 9.50 |
| Chicago, net | 6.50 to 7.00 |
| Cinci., deal. net | 5.75 to 6.25 |
| Det., net, deal. | 6.25 to 6.75 |
| Eastern Pa. | 9.00 |
| N. Y., deal. mill | 4.75 |
| St. Louis | 8.00 to 8.50 |

### COUPLERS, SPRINGS

| | |
|---|---|
| Buffalo | 13.50 to 14.00 |
| Chicago | 12.00 to 12.50 |
| Eastern Pa. | 16.00 to 16.50 |
| Pittsburgh | 15.75 to 16.25 |
| St. Louis | 11.00 to 11.50 |

### ANGLE BARS—STEEL

| | |
|---|---|
| Chicago | 12.00 to 12.50 |
| St. Louis | 9.50 to 10.00 |

### LOW PHOSPHORUS

| | |
|---|---|
| Buff., billets and bloom crops | 15.00 to 15.50 |
| Cleveland bil. and bloom crops | 16.50 to 17.00 |
| Eastern Pa. | 17.00 |
| Pittsburgh billet, bloom crops | 17.50 to 18.00 |
| Pitts. sheet bar crops | 16.00 to 16.50 |

### FROGS, SWITCHES

| | |
|---|---|
| Chicago | 10.00 to 10.50 |
| St. Louis | 10.50 to 11.00 |

### SHOVELING STEEL

| | |
|---|---|
| Chicago | 10.00 to 10.50 |
| Cleveland | 6.75 to 7.25 |
| St. Louis | 9.50 to 10.00 |

### RAILROAD WROUGHT

| | |
|---|---|
| Birmingham | 9.50 to 10.00 |
| Boston, dealers | 8.00 to 8.50 |
| Buffalo, No. 1 | 8.50 to 9.00 |
| Buffalo, No. 2 | 11.50 to 12.00 |
| Chicago, No. 1 | 10.00 to 10.50 |
| Chicago, No. 2 | 10.00 to 10.50 |
| Cinci., No. 2 | 10.00 to 10.50 |
| Eastern Pa. | 13.50 |
| N. Y., No. 1 deal. | 10.00 to 10.50 |
| Pitts., No. 2 | 12.50 to 13.00 |
| St. Louis, No. 1 | 7.75 to 8.25 |
| St. Louis, No. 2 | 9.50 to 10.00 |

### SPECIFICATION PIPE

| | |
|---|---|
| Boston | 6.50 to 7.00 |
| Eastern Pa. | 12.00 |
| N. Y., deal | 7.25 to 7.50 |

### BUSHELING

| | |
|---|---|
| Buffalo, No. 1 | 9.75 to 10.00 |
| Chicago, No. 1 | 8.00 to 8.50 |
| Cinn., No. 1 dl. | 8.50 to 9.00 |
| Cinn., No. 2 | 5.00 to 5.50 |
| Cleve., No. 2 | 6.00 to 6.50 |
| Det., No. 1 new deal | 8.50 to 9.00 |
| St. L. No. 1 | 7.00 to 7.50 |
| Val. new No. 1 | 12.00 to 12.50 |

### MACHINE TURNINGS

| | |
|---|---|
| Birmingham | 7.50 to 8.00 |
| Boston, dealers | 2.10 to 2.60 |
| Buffalo | 6.00 to 7.00 |
| Chicago | 4.75 to 5.25 |
| Cinn., deal. | 5.00 to 5.50 |
| Cleveland | 4.75 to 5.25 |
| Detroit | 3.75 to 4.25 |
| Eastern Pa. | 6.50 to 7.50 |
| N. Y., deal. | 4.00 |
| Pittsburgh | 6.00 to 6.50 |
| St. Louis | 4.00 to 4.50 |
| Valleys | 6.00 to 6.50 |

### BORINGS AND TURNINGS For Blast Furnace Use

| | |
|---|---|
| Boston | 2.00 to 2.10 |
| Buffalo | 7.00 to 8.00 |
| Cinn., deal. | 5.00 to 5.50 |
| Cleveland | 6.75 to 7.25 |
| Detroit, deal | 4.50 to 5.00 |
| Eastern Pa. | 6.00 to 7.00 |
| N. Y., deal. | 4.00 |
| Pittsburgh | 7.00 to 7.50 |

### CAST IRON BORINGS

| | |
|---|---|
| Birming., chem. | 12.50 to 13.00 |
| Birming., plain | 7.50 to 8.00 |
| Boston., chem. | 9.00 to 9.50 |
| Boston, deal. | 2.10 to 2.60 |
| Buffalo | 7.00 to 8.00 |
| Chicago | 3.50 to 4.00 |
| Cinn. deal. | 5.00 to 5.50 |
| Cleveland | 6.75 to 7.25 |
| Detroit, deal | 4.50 to 5.00 |
| Eastern Pa. | 7.50 to 8.00 |
| E. Pa., chem. | 14.00 to 14.50 |
| N. Y., deal. | 4.00 |
| Pittsburgh | 7.00 to 7.50 |
| St. Louis | 6.00 to 6.50 |

### PIPE AND FLUES

| | |
|---|---|
| Cinn., deal | 8.00 to 8.50 |

### RAILROAD GRATE BARS

| | |
|---|---|
| Buffalo | 7.50 to 8.00 |
| Chicago net | 6.50 to 7.00 |
| Cincinnati | 7.00 to 7.50 |
| Eastern Pa. | 9.50 |
| N. Y., deal. | 6.00 |
| St. Louis | 7.50 to 8.00 |

### FORGE FLASHINGS

| | |
|---|---|
| Boston, deal. | 6.00 to 6.25 |
| Buffalo | 10.00 to 10.50 |
| Cleve. ov. 10 in. | 9.00 to 9.50 |
| Detroit | 8.75 to 9.25 |

### FORGE SCRAP

| | |
|---|---|
| Boston, del. | 5.50 to 6.00 |
| Chicago | 13.50 to 14.00 |
| Eastern Pa. | 11.00 |

### ARCH BARS, TRANSOMS

| | |
|---|---|
| Chicago, net | 11.50 to 12.00 |
| St. Louis | 11.50 to 12.00 |

### AXLE TURNINGS

| | |
|---|---|
| Boston, deal. | 6.75 to 7.00 |
| Buffalo | 10.50 to 11.00 |
| Chi., steelworks | 6.50 to 7.00 |
| Cleveland | 9.50 to 10.00 |
| Eastern Pa. | 10.50 to 11.00 |
| Pittsburgh | 11.00 to 11.50 |
| St. Louis | 7.50 to 8.00 |

### STEEL CAR AXLES

| | |
|---|---|
| Birmingham | 14.00 to 15.50 |
| Boston, ship. pt. | 16.00 to 16.50 |
| Buffalo | 15.50 to 16.00 |
| Chicago | 15.10 to 15.70 |
| Eastern Pa. | 20.50 |
| St. Louis | 14.00 to 14.50 |

### SHAFTING

| | |
|---|---|
| Bos., ship. pt. | 13.00 to 13.50 |
| Chicago | 12.90 to 13.45 |
| N. Y., deal. | 13.00 to 14.00 |
| St. Louis | 12.00 to 12.50 |

### CAR WHEELS

| | |
|---|---|
| Birming., iron | 10.00 to 11.00 |
| Boston, iron | 14.00 to 14.50 |
| Buffalo, iron | 13.00 to 13.50 |
| Buffalo, steel | 13.50 to 14.00 |
| Chicago, iron | 11.50 to 12.00 |
| Chi., roll steel | 13.50 to 14.00 |
| Cincinnati, iron | 11.00 to 11.50 |
| E. Pa. steel | 15.50 to 16.00 |
| E. Pa. iron | 14.00 to 14.50 |
| Pitts., iron | 13.50 to 14.00 |
| Pitts., steel | 15.75 to 16.25 |
| St. Louis iron | 10.50 to 11.00 |
| St. Louis, steel | 13.00 to 13.50 |

### NO. 1 CAST SCRAP

| | |
|---|---|
| Birming., cup. | 10.00 to 10.50 |
| Buffalo (mac.) | 11.00 to 11.50 |
| Boston, textile | 11.50 to 12.50 |
| Chicago, mach. | 10.65 to 11.20 |
| Chi., railroad | 10.10 to 10.65 |
| Chicago, agri. | 9.50 to 10.10 |
| Cinn., mach. cup., gross | 14.50 to 15.50 |
| Cleve. cupola | 12.00 to 12.50 |
| Det., net deal. | 8.50 to 9.00 |
| E. Pa. cupola | 12.50 to 13.00 |
| N. Y. cup. deal | 8.00 to 8.50 |
| N. Y., del. local foundries | 14.00 |
| Pitts., cupola | 12.50 to 13.00 |
| San Fran., del. | 13.50 to 14.00 |
| Seattle | 14.00 to 14.25 |
| St. L. No. 1 ma | 9.75 to 10.25 |
| St. L. No. 1 | 9.00 to 9.50 |

### HEAVY CAST

| | |
|---|---|
| Boston | 10.50 to 11.00 |
| Bos. mach. cast | 11.50 to 12.50 |
| Buffalo, break | 7.25 to 7.75 |
| Cleve., break | 6.50 to 7.00 |
| Detroit, auto, net deal. | 10.50 to 11.00 |
| Det., break., dl. | 6.50 to 7.00 |
| Eastern Pa. | 10.50 to 11.00 |
| N. Y. No. 1 dl. | 7.00 to 8.00 |
| N. Y. break. dl. | 7.00 |
| Pittsburgh | 9.00 to 9.50 |

### MALLEABLE

| | |
|---|---|
| Boston R. R. | 13.00 to 13.50 |
| Buffalo | 13.00 to 13.50 |
| Chicago, agri. | 11.00 to 11.50 |
| Chicago, R. R. | 12.00 to 12.50 |
| Cinn., R. R. dl. | 12.50 to 13.00 |
| Cinn., agri., dl. | 12.50 to 13.00 |
| Cleve., rail | 12.50 to 13.00 |
| Det. auto deal. | 12.00 to 12.50 |
| St. Louis, rail | 10.00 to 10.50 |

### RAILS FOR ROLLING 5 feet and over

| | |
|---|---|
| Birmingham | 11.50 to 12.00 |
| Boston | 10.00 to 10.25 |
| Buffalo | 10.00 to 10.50 |
| Chicago | 13.00 to 13.50 |
| Eastern Pa. | 20.50 |
| New York | 9.50 to 10.00 |
| St Louis | 11.25 to 11.75 |

### LOCOMOTIVE TIRES

| | |
|---|---|
| Chicago, cut | 13.00 to 13.50 |
| St. L. No. 1 | 11.00 to 11.50 |

### LOW PHOS. PUNCHINGS

| | |
|---|---|
| Chicago | 12.00 to 12.50 |
| Pittsburgh | 15.00 to 15.50 |
| Eastern Pa. | 16.00 to 17.00 |
| Buffalo | 14.00 to 14.50 |

Applying Granite City Plates for Battle Deck Floor in new building of Superior Structural Steel Company, St. Louis.

# Battle Deck Floors Reduce Dead Weight 50%

*Increase rentable area in multi-storied buildings one floor in every twenty*

TO quote Mr. F. H. Frankland, Director of Engineering Service, American Institute of Steel Construction, "With the usual type of building construction, the dead weight of the floor is 70 lbs. to 80 lbs. per square foot. The Battle Deck Floor, on the other hand, imposes a load on the girders of only 30 lbs. per square foot. The substitution of welded steel plate and I beams for heavier materials of construction in the fabrication of floor panels for multi-storied buildings for the same height allows an increase in rentable area of one floor in every twenty."

The Granite City Steel Company, makers of Granite City Plates and Sheets, will be glad to furnish further information on Battle Deck Flooring to those interested in its use and application.

Chicago
Dallas
Kansas City
Los Angeles

SINCE
GRANITE CITY STEEL
1878

San Francisco
Salt Lake City
St. Louis
St. Paul

# GRANITE CITY STEEL CO. GRANITE CITY ILLINOIS

**Galvanized, Blue Annealed and Black Sheets - Plates and Tin Plate**

duced prices on several grades of scrap. Heavy breakable cast is now $7, New York, compared with $7 to $7.50 previously; yard steel for eastern consumption is off 50 cents a ton to $5.50, New York, and No. 2 steel is down to the same level, formerly holding at $6.25 to $6.50, New York. A factor in the latter revision is a reduction on a fair tonnage for Pencoyd, Pa. Stove plate for mill consumption is now at $4.75, New York, following a 50-cent reduction on a small tonnage for shipment to Harrisburg, Pa. The reduction in heavy breakable cast was due to a revision at Florence, N. J., where a tonnage was recently purchased at $10.50, delivered. Demand generally is quiet.

**Boston**—Nearly half a dozen scrap grades went to lower levels during the past week, though the declines were small. Machinery cast, mixed borings and turnings, cast iron borings for steel mills, and machine shop turnings sold down slightly.

**Philadelphia**—A recent development of the steel and iron scrap market is the appearance of $11 to $11.50 on No. 1 heavy melting steel on recent sales of 2500 tons at $11.10 to $11.50, delivered, Eastern Pennsylvania, several small sales at $11 and an offer of one large tonnage at $11, which was declined. Current scrap business involves good sized tonnages in the aggregate, with price tendency distinctly downward.

**Buffalo**—Purchase of a fair tonnage of stove plate at $9.50 is reported here. Two consumers were buyers. Other materials are quiet and shipments low.

**Baltimore**—After buying a substantial tonnage of No. 1 heavy melting steel recently at $10.50, delivered Sparrows Point, the leading consumer in this district has dropped its price 50 cents to $10. No business yet has been done at the latter figure.

**Pittsburgh**—A firmer tone has appeared in steel and iron scrap, with prices generally unchanged. Dealers are finding large lots of heavy melting steel scarce at much below the recent sale price of $13 and this grade is firm at $12.50 to $13, despite lack of mill interest in new buying. Railroad specialties also are in a tight market but blast furnace materials are receiving no call and are weaker.

**Cleveland**—Inactivity continues in the iron and steel scrap market. Prices on principal grades show little change but are largely nominal, due to lack of transactions. Steelworks remain out of the market as do most foundry consumers. No. 1 heavy melting steel is $10.50 to $11 with blast furnace borings and turnings $6.75 to $7.25. Little scrap is now moving to valley consumers and the market there continues generally quiet.

**Cincinnati**—Prices on iron and steel scrap are nominally unchanged. Several consumers are accepting shipments on a restricted schedule but new business is scarce.

**St. Louis**—Dullness in the iron and steel scrap market was increased by the Thanksgiving holiday and business was in the smallest volume for any week this year. Prices were unchanged, but due to paucity of transactions, quotations on a number of items are purely nominal. Little change is looked for during the remainder of this year. Generally there is a disposition to postpone purchasing, except of necessities, until the turn of the year, to hold down inventories.

**Birmingham, Ala.**—Old material tonnage moving still is low and quotations are weak. No further reduction is expected, heavy melting steel selling at less than $11.

**Toronto, Ont.**—Iron and steel scrap sales continue in small volume, but there are indications of improvement soon. Mills are taking in small quantities of heavy melting steel, both on new orders and against contract. Iron grades have improved, due to larger buying by consumers whose stocks had disappeared. No future awards are reported, but inquiry is coming out. Prices are unchanged.

## Canadian Scrap

**Dealers' Buying Prices**

**MONTREAL**

**Per Gross Ton**

| | |
|---|---|
| Iron axles | $11.00 |
| Steel axles | 10.00 |
| Car wheels | 8.00 |
| Stove plate | 8.00 |
| Wrought pipe | 2.00 |
| Turnings | 2.00 |
| Heavy melting steel | 6.00 |

**TORONTO**

| | |
|---|---|
| Steel axles | 7.00 |
| Iron axles | 7.00 |
| Heavy melting steel | 7.00 |
| Turnings | 2.00 |
| No. 1 mach. cast (net) | 9.00 |
| Malleable (net) | 7.00 |

# Coke

**Demand Increased by Cold Weather—Heating Fuel $2.40 —Foundry Movement Is Steady**

COKE PRICES, PAGE 98

**Pittsburgh**—Severe weather is stimulating demand for beehive coke for heating purposes. Both industrial and domestic consumers recently buying only small lots for early needs have been forced to enter the market for additional tonnage. Furnace coke is in poor demand for blast furnaces but is moving in some instances for heating purposes. Heating coke is quotable around $2.40 to $2.50. Foundry coke demand is steady but light.

Beehive coke production in the Connellsville district during the week ending Nov. 22 was 16,200 tons against 16,600 tons the preceeding week, and 43,950 tons the corresponding week of last year, according to the *Connellsville Courier*.

**Boston** — Shipments of foundry coke on contracts continue fairly steady. Demand for domestic fuel has increased. Prices are unchanged.

**New York**—Steadiness features the coke market. Beehive furnace is $2.50 to $2.65, Connellsville, Pa., and standard grades of beehive foundry, $3.50 to $3.75. Premium foundry coke is $4.70 to $4.85, Latrobe, Pa. Demand is showing little variation, but buying of furnace coke is expected to improve as colder weather sets in. By-product coke is $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia.

**Chicago** — November by-product foundry coke shipments gained slightly over October, due largely to the increase in demand for foundry heating, rather than the melt. Many of the buyers have contracted for half or all of next year at $8, ovens.

**Cincinnati**—With consumers holding down inventories and the melt unimproved dealers foresee no increase in demand for by-product foundry coke this month. Domestic coke is moving steadily.

**St. Louis**—Coke demand is slow, with the movement from local ovens to the West and Southwest the smallest for this season in many years. Prices are steady.

**Birmingham, Ala.**—Fewer than 500 ovens of the 1390 at by-product plants in this state are idle. Shipments are being made in many directions. Makers have been quoting $5 on foundry coke for two years.

# Pacific Coast

**California Has Larger Bar Awards — Pending Projects Promise Later Tonnages—Pipe Sales Are Small—Bridge and Highway Building Help Keep Up Interest—Prices Unchanged**

**San Francisco**—(*By Air Mail*)—Except in reinforcing steel bars, awards this week were not particularly heavy. However, pending projects will require a large tonnage and most probably will be placed before the end of the year. Prices, while far from firm, have receded no further.

### Bars, Plates and Shapes

Demand for reinforcing bars is holding up well. Awards this week were the largest since September and aggregated 2974 tons, bringing the total for the year to 64,505 tons, compared with 78,065 tons for the corresponding period last year. Among the larger lots were 800 tons for a school in Honolulu, placed with an unknown company. Bids have been opened on 860 tons for the Olympic club, San Francisco. New inquiries include 159 tons for paving work in Santa Barbara county, Calif., and 100 tons for an apartment in Los Angeles. Quotations in the San Francisco and Los Angeles districts on out-of-stock material remain unchanged at 2.50c, base, on carload lots.

The only plate award of importance this week involved 100 tons for a 40,000-barrel tank for the city of Pasadena, Calif., to be fabricated by the Consolidated Steel Corp. Pending business calls for more than 3700 tons. Prices continue 2.05c to 2.15c, c.i.f.

While awards of structural shapes did not exceed 2000 tons, close to 25,000 tons are now pending. So far this year 102,958 tons have been placed, compared with 167,718 tons for same period last year. McClintic-Marshall Co. took 240 tons for an apartment in Santa Monica, Calif., and 175 tons additional for a light plant for Pasadena, Calif. The Shell Drake hotel, San Francisco, involving 216 tons, went to the Judson-Pacific Co. Bids were opened on the Pulga River bridge in Butte county, Calif., calling for 787 tons. Prices on plain shapes remain unchanged at 2.15c to 2.25c, c.i.f.

### Other Finished Material

Sales of cast iron pipe were limited to one lot in excess of 100 tons. Hoquiam, Wash., placed 236 tons with the American Cast Iron Pipe Co. and 26 tons with the Central Foundry Co. Long Beach will open bids Dec. 4 for 135 tons of 2-inch pipe. Bids have been opened on 3336 tons of pipe for Los Angeles. San Francisco will open bids Dec. 1 for 926 tons of 6 and 8-inch pipe. No pipeline inquiries of importance are up for figures.

## Coast Pig Iron Prices

| | |
|---|---|
| Utah basic | $22.00 to 24.00 |
| Utah foundry | 22.00 to 24.00 |
| *German | 24.25 |
| *Indian | 22.00 to 24.00 |

*C.i.f. duty paid.

## Winter Dullness Appears

**Seattle**—There is a fair demand for some classes of iron and steel products but other branches of the industry are depressed and no improvement is now expected before early spring. A few tonnages are pending which will add considerable to November's totals. Notwithstanding lack of active buying, prices are holding steady.

### Pig Iron and Coke

Only a few foundries have much work on hand, most being practically idle. Conditions have not improved lately and not much new work is expected until spring. Plants depending on lumber and logging operations are doing little. No. 1 Columbia pig iron is still quoted at $25.50 or $24.50 in 100 ton lots. Little first quarter business has been placed. British coke is used in local steel plants and is being delivered here in four to five weeks, prices unchanged at $14.

### Bars, Plates and Shapes

Several small tonnages of reinforcing bars are pending and no important projects have developed. About 200 tons are involved in various Washington highway projects, general contracts amounting to $375,000 being awarded this week. American Can Co. has been given permission to build a reinforced concrete viaduct at its local plant.

Seattle city council has approved another pipe line job to cost $50,000 but specifications are not yet prepared. No new projects involving plates have come up for figures recently. Puget Sound Power & Light Co. has completed installation of a 12-inch seamless steel pipe, 2000 feet long, connecting two of its local steam plants.

Hodgson, King & Marble and Dawson, Wade & Co., Ltd., Vancouver, B. C., general contractors for the Burrard street bridge, Vancouver, are reported to have awarded to unnamed British Columbia producers 3200 tons of shapes and 2000 tons of reinforcing steel. Northern Pacific railroad announces plans for an extensive car rebuilding program which will involve, it is reported, 20,000 tons of fabricated steel, 2700 tons of iron and steel castings and 300 tons of steel forgings. Portland is about to call bids for rebuilding its Hawthorne street bridge. General Construction Co., Seattle, was low bidder at $61,431 for building the Snoqualmie river bridge, 442 feet long, for the state highway commission, involving 200 tons of steel, while L. F. Duff, Seattle, was low bidder at $13,649 for the Little Klickitat river bridge, 100 tons. Newport Construction & Engineering Co., Newport News, Va., has been awarded the contract for the navy warehouse at Bremerton, Wash., 300 tons of shapes. The navy will receive bids next month for a second warehouse at Bremerton and for a power house at Sand Point air station, Seattle. Local fabricators are awaiting award of contract for furnishing 3300 tons of structurals for the proposed Ford assembly plant at Seattle.

### Finished Materials

Conditions in wholesale jobbing are unusually quiet and show considerable decline from October. Buying is at a minimum and confined to small orders. No changes in warehouse prices are reported.

### Pipe Sales Are Small

Awards included two municipal projects at Vancouver, B. C., said to total more than 750 tons. Evans, Coleman & Evans Ltd. will furnish 33,200 feet of De Lavaud pipe on a bide of $31,197 while Leith, Murray & Co. Ltd. will supply 4000 feet of 14-inch English pipe, the bid being $12,224. Bids for a large water pipe job at Brighouse, B. C., have been postponed to Dec. 1 from Nov. 17, while action on 135 tons for Renton, Wash., has also been advanced to next month. Portland will open bids Dec. 8 for furnishing a large number of gate valves, 6 to 24 inches. Kelso, Wash., has opened bids for about 50 tons of 6-inch cast iron pipe and hydrants.

# Steel, Wrought and Cast Iron Pipe, and Tubing

## Welded Iron, Steel Pipe

**Base Price $200 Ton**

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought iron pipe, Pittsburgh base.

**BUTT WELD**

| Steel | | | Iron | | |
|---|---|---|---|---|---|
| In. | Blk. | Gal. | In. | Blk. | Gal. |
| ⅛ | 58 | 44½ | ⅛–¼ | 23 | 5 |
| ¼ | 62 | 50½ | ⅜–½ | 28 | 11 |
| ¾ | 64 | 52½ | ¾ | 28 | 15 |
| 1–3 | 64 | 52½ | 1 and 1¼ | 31 | 15 |
| | | | 1½ and 2 | 35 | 18 |

**LAP WELD**

| | | | | | |
|---|---|---|---|---|---|
| 2 | 57 | 45½ | 2 | 23 | 9 |
| 2½–6 | 61 | 49½ | 2½–3½ | 28 | 13 |
| 7–8 | 58 | 45½ | 4–6 | 30 | 17 |
| 9–10 | 56 | 43½ | 7 and 8 | 29 | 16 |
| 11–12 | 55 | 42½ | 9–12 | 26 | 11 |

**BUTT WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ⅛ | 55 | 44½ | ¼ & ⅜ | +13 | +48 |
| ¼ | 60 | 49½ | ½ | 23 | 7 |
| 1–1½ | 62 | 51½ | ¾ | 28 | 12 |
| 2–3 | 63 | 52½ | 1–2 | 34 | 18 |

**LAP WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 55 | 44½ | 2 | 29 | 13 |
| 2½–4 | 59 | 48½ | 2½–4 | 34 | 20 |
| 4½–6 | 58 | 47½ | 4½–6 | 33 | 19 |
| 7–8 | 54 | 41½ | 7 and 8 | 31 | 17 |
| 9–10 | 47 | 34½ | 9–12 | 21 | 8 |
| 11–12 | 46 | 33½ | | | |

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

**BOILER TUBES**

| Carload Discounts, Lap Welded Steel | | f.o.b. Pittsburgh Charcoal Iron | |
|---|---|---|---|
| 2–2¼ | 38 | 1¾ | 8 |
| 2½–2¾ | 46 | 2–2¼ | 13 |
| 3 | 52 | 2½–2¾ | 16 |
| 3¼–3¾ | 54 | 3 | 17 |
| 4 | 57 | 3¼–3½ | 18 |
| 4½–6 | 46 | 4 | 20 |
| 1½ | 1 | 4½ | 21 |

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

**STANDARD COMMERCIAL SEAMLESS BOILER TUBES**

**COLD DRAWN**

| | | | |
|---|---|---|---|
| 1 | 61 | 3 | 46 |
| 1¼–1½ | 53 | 3¼–3½ | 48 |
| 1¾ | 37 | 4 | 51 |
| 2–2¼ | 32 | 4½, 5, 6 | 40 |
| 2½–2¾ | 40 | | |

**HOT ROLLED**

| | | | |
|---|---|---|---|
| 2–2¼ | 38 | 3¼–3½ | 54 |
| 2½–2¾ | 46 | 4 | 57 |
| 3 | 52 | 4½, 5, 6 | 46 |

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Tubing

**Cold drawn; f.o.b. mill**

Random lengths over 5 ft. .....55%
Selected lengths, 1 to 18 ft. .....53%

## Cast Iron Water Pipe

**Class B Pipe—Per Net Ton**

Six-inch and over, Bir..... $37.00 to 38.00
Four-inch, Birmingham..... 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago..... 45.20 to 46.20
Six-inch and over, N. Y. .... 38.50 to 40.50
Four-inch, New York ..... 41.50 to 42.50
Stand. fittings, Bir. base..... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

# Warehouse Quotations at Leading Centers, in Cents Per Pound

**STEEL BARS**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.265c |
| Buffalo | 3.15c |
| Chattanooga | 3.10c |
| Chicago | 2.90c |
| Cincinnati | 3.15c |
| Cleveland | 2.85c |
| Detroit | 3.00c |
| Houston | 3.00c |
| Los. Ang. | 3.40c |
| New York†† | 3.10c |
| Philadelphia | 2.60c |
| Pittsburgh | 2.75c |
| Portland | 3.15c |
| San Frans. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.15c |
| St. Paul | 3.00c |
| Tulsa | 3.65c |

**IRON BARS**

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.265c |
| Buffalo | 3.15c |
| Chattanooga | 3.10c |
| Chicago | 3.00c |
| Cincinnati | 3.15c |
| Detroit | 3.00c |
| New York†† | 3.10c |
| Philadelphia | 2.60c |
| St. Louis | 3.15c |
| Tulsa | 3.65c |

**REINFOR. BARS**

| | |
|---|---|
| Baltimore | 2.50c-3.31c |
| Boston | 3.265c |
| Buffalo | 2.95c |
| Chattanooga | 3.10c |
| Cincinnati | 3.15c |
| Cleveland | 2.25c-2.44c |
| Detroit | 3.00c |
| Houston | 3.00c |
| Los Ang. cl. | 2.40c |
| Los Ang. lcl. | 2.70c |
| New York | 2.65c-3.10c |
| Phila. | 2.40c-3.00c |
| Pittsburgh | 2.75c |
| San Fran. cl. | 2.30c |
| San Fran. lcl. | 2.60c |
| Seattle | 3.15c |
| St. Louis | 3.15c |
| Tulsa | 3.65c |
| Young. | 2.30c-2.60c |

**SHAPES**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.365c |
| Buffalo | 3.25c |
| Chattanooga | 3.20c |
| Chicago | 3.00c |
| Cincinnati | 3.25c |
| Cleveland | 2.95c |
| Detroit | 3.10c |
| Houston | 3.25c |
| Los. Ang. | 3.40c |
| New York | 3.10c |
| Philadelphia | 2.50c |
| Pittsburgh | 2.85c |
| Portland | 3.15c |
| San Fran. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.25c |
| St. Paul | 3.10c |
| Tulsa | 3.75c |

**PLATES**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.365c |
| Buffalo | 3.25c |
| Chattanooga | 3.20c |
| Chicago | 3.00c |
| Cincinnati | 3.25c |
| Cleveland, ¼-in. and thicker | 2.95c |
| Clev., 3/16-in. | 3.20c |
| Detroit | 3.10c |
| Det., 3/16-in. | 3.10c |
| Houston | 3.00c |
| Los Angeles | 3.40c |
| New York | 3.30c |
| Philadelphia | 2.50c |
| Phila. floor | 5.10c |
| Pittsburgh | 2.85c |
| Portland | 3.15c |
| San Fran. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.25c |
| St. Paul | 3.10c |
| Tulsa | 3.75c |

**NO. 10 BLUE**

| | |
|---|---|
| Baltimore | 3.50c |
| Bost. 3/16-in. | 9.915c |
| Buffalo | 3.50c |
| Chattanooga | 3.60c |
| Chicago | 3.35c |
| Cincinnati | 3.45c |
| Cleveland | 3.10c |
| Detroit | 3.35c |
| Houston | 3.90c |
| Los Ang. | 3.95c |
| New York | 3.40c |
| Portland | 4.00c |
| Phila.*† | 3.05c |
| Pitts.** | 2.75c |
| San Fran. | 3.80c |
| Seattle | 4.00c |
| St. Louis | 3.45c |
| St. Paul | 3.40c |
| Tulsa | 3.95c |

**NO. 24 BLACK**

| | |
|---|---|
| Balt.*† | 3.75c |
| Boston | 4.70c |
| Buffalo | 4.20c |
| Chicago | 3.80c |
| Cincinnati | 4.05c |
| Clev.*** | 3.75c |
| Detroit | 3.75c |
| Los Ang. | 4.70c |
| New York | 3.55c-3.65c |
| Phila.*† | 3.60c |
| Pitts.** | 3.40c |
| Portland | 5.00c |
| San Fran. | 4.35c |
| Seattle | 5.00c |
| St. Louis | 4.05c |
| St. Paul | 3.545c |
| Tulsa | 4.45c |

**NO. 24 GAL. SHEETS**

| | |
|---|---|
| Balt.*† | 4.25c |
| Boston | 5.45c |
| Buffalo | 4.40c-4.60c |
| Chicago (local del.) | 4.35c |
| Chicago (outside) | 4.35c-4.60c |
| Cincinnati | 4.90c |
| Cleveland*** | 4.35c |
| Detroit | 4.25c |
| Houston | 5.40c |
| Los Ang. | 5.10c |
| New York | 4.25c |
| Phila.*† | 4.15c |
| Pitts.** | 4.00c |
| Portland | 5.50c |
| San Fran. | 5.00c |
| Seattle | 5.50c |
| St. Louis | 4.60c |
| St. Paul | 4.23c |
| Tulsa | 5.35c |

**BANDS**

| | |
|---|---|
| Baltimore | 3.50c |
| Boston | 4.015c-5.00c |
| Buffalo | 3.50c |
| Chattanooga | 3.30c |
| Chicago | 3.10c |
| Cincinnati | 3.35c |
| Cleveland | 3.10c |
| Det. 3/16-in. & lighter | 3.30c |
| Houston | 3.65c |
| Los Ang. | 4.30c |
| New York | 3.40c |
| Philadelphia | 2.90c |
| Pittsburgh | 3.10c |
| Portland | 3.50c |
| San Fran. | 3.75c |
| Seattle | 4.15c |
| St. Paul | 3.75c |
| Tulsa | 3.85c |

**HOOPS**

| | |
|---|---|
| Baltimore | 3.50c |
| Boston | 5.50c-6.00c |
| Buffalo | 3.90c |
| Chicago | 3.65c |
| Cincinnati | 3.90c |
| Cleveland | 3.65c |
| Det. No. 14 & lighter | 3.80c |
| New York | 3.75c |
| Philadelphia | 3.15c |
| Pittsburgh | 4.10c |
| Seattle | 5.15c |
| St. Paul | 3.70c |

**COLD FIN. STEEL**
**Rounds & Hexagons**

| | |
|---|---|
| Baltimore (c) | 3.30c |
| Boston | 3.50c |
| Buffalo | 3.15c |
| Chattanooga* | 3.85c |
| Chicago | 3.35c |
| Cincinnati | 3.80c |
| Cleveland | 3.40c |
| Detroit | 3.65c |
| Los Ang. (a) | 4.50c |
| New York | 3.50c |
| Philadelphia* | 3.40c |
| Pittsburgh | 3.35c |
| Portland (a) | 4.50c |
| San. Fran.(a) | 4.25c |
| Seattle (a) | 4.75c |
| St. Paul (a) | 3.85c |
| St. Louis | 3.60c |
| Tulsa | 4.75c |

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

**COLD ROLL. STRIP**

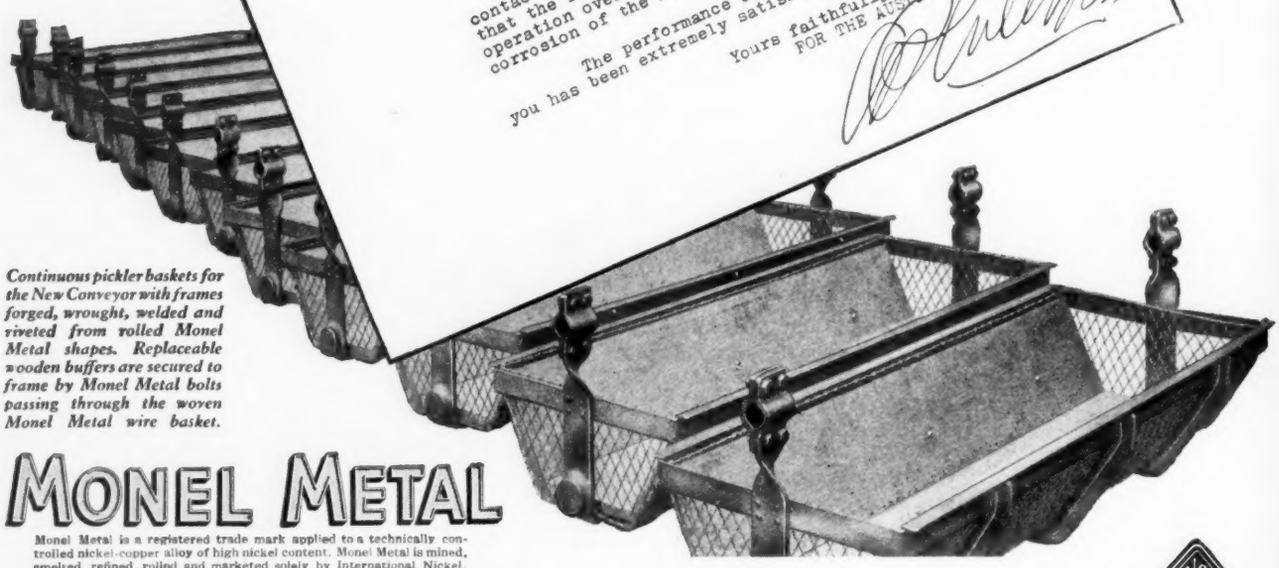
| | |
|---|---|
| Boston 0.100 in., 500 lb. lots | 5.30c |
| Buffalo | 5.65c |
| Chicago (soft) (b) | 6.15c |
| Cincinnati | 6.10c |
| Clev. (b) | 5.95c |
| Detroit | 5.40c |
| Phila. (c) | 4.85c |
| New York | 5.05c |

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

# MONEL METAL PICKLING BASKETS SHOW "NO TRACE OF CORROSION" AFTER 3 YEARS' DAILY SERVICE! • • • •

No 45
Pickling Equipment that passes the test of service
PLEASE ADDRESS ALL COMMUNICATIONS TO THE FIRM AND QUOTE OUR REFERENCE
The Austin Motor Company Ltd
BUILDERS OF MOTOR VEHICLES
LONGBRIDGE WORKS, BIRMINGHAM
BUY BRITISH GOODS
LONDON SERVICE DEPOTS:
HOLLAND PARK HALL, HOLLAND PARK AVENUE, W.2.
25-27 NORTH ROW, OXFORD ST. W.1
OUR REFERENCE AP/SHM.
CONSIGN GOODS TO LONGBRIDGE (RUBERY) L.M.&S. AND G.W.R.
11th.February,1930.
Messrs. Monel-Weir Ltd.,
Engineers,
CATHCART,
G l as g o w.
Monel-Metal
Dear Sirs,
You have now received from us two separate orders for sets of Baskets composed of Monel Metal parts, including Monel metal wire mesh, for carrying parts for pickling.
We are pleased to inform you that both sets of the baskets continue to give complete satisfaction.
They are in constant use day and night in contact with sulphuric acid, and in spite of the fact that the first set of baskets have now been in operation over three years, there is no trace of any corrosion of the metal.
The performance of materials we have had from you has been extremely satisfactory.
Yours faithfully,
FOR THE AUSTIN MOTOR CO.LTD.

*Continuous pickling conveyor for acid pickling of steel auto forgings prior to inspection for defects and machining operations. Built by the New Conveyor Co., Birmingham, England, for the Austin Motor Co., Ltd. The Monel Metal conveyor baskets show no trace of corrosion after three years steady service, day and night.*



*Continuous pickler baskets for the New Conveyor with frames forged, wrought, welded and riveted from rolled Monel Metal shapes. Replaceable wooden buffers are secured to frame by Monel Metal bolts passing through the woven Monel Metal wire basket.*

**MONEL METAL**

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

INCo MONEL METAL TRADE MARK

## Mill Products

**Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 12.00c, Conn., for copper**

| | |
|---|---|
| **Sheets** | |
| Yellow brass (high) | 18.62½ |
| Copper, hot rolled | 21.75 |
| Lead, full sheets (cut ½c more) | 9.00 |
| Zinc sheet (100-lb. base) | 9.50 |
| **Tubes and Pipes** | |
| Seamless yellow brass (high) | 23.50 |
| Seamless copper | 24.12½ |
| **Rods** | |
| Yellow brass (high, full turnings) | 16.87½ |
| Naval brass | 19.00 |
| **Anodes** | |
| Copper, untrimmed | 19.25 |
| **Wire** | |
| Yellow brass (high) | 19.12½ |

## Old Metals

**Dealers' buying prices, cents lb.**

| | |
|---|---|
| **Heavy Red Brass** | |
| New York | 7.25 to 7.50 |
| Chicago | 7.00 to 7.25 |
| Cleveland | 7.50 to 8.00 |
| St. Louis | 7.25 to 7.50 |
| **Heavy Yellow Brass** | |
| New York | 5.00 to 5.25 |
| **Heavy Copper and Wire** | |
| New York | 8.00 to 8.25 |
| Boston | 8.00 to 8.25 |
| Chicago | 7.75 to 8.50 |
| Cleveland | 7.00 to 7.50 |
| St. Louis | 7.00 to 7.50 |
| **Red Brass Borings** | |
| New York | 6.75 to 7.00 |
| **Yellow Brass Tubing** | |
| Cleveland | 4.50 to 5.00 |
| **Light Copper** | |
| New York | 7.75 to 8.00 |
| Chicago | 6.75 to 7.25 |
| Cleveland | 6.50 to 7.00 |
| St. Louis | 6.75 |
| **Light Brass** | |
| Boston | 4.00 to 4.25 |
| Chicago | 4.25 to 4.50 |
| Cleveland | 3.50 to 4.00 |
| St. Louis | 4.00 to 4.25 |
| **Zinc** | |
| New York | 2.00 to 2.25 |
| Cleveland | 1.50 to 1.75 |
| St. Louis | 2.00 |
| **Aluminum** | |
| Clippings, soft, Cleveland | 12.00 to 13.00 |
| Clippings, hard, Cleveland | 8.00 to 9.50 |
| Borings, Cleveland | 5.00 to 5.50 |
| Mixed cast, Cleveland | 6.00 to 6.50 |
| Mixed cast, Boston | 5.50 to 6.00 |
| Mixed cast, St. Louis | 6.00 |

## Secondary Metals

| | |
|---|---|
| Remelt aluminum No. 12 | 13.50 |
| Brass ingots, 85-5-5-5 | 11.25 |

## Quicksilver Is Quiet

**New York**—Quicksilver is quiet at $106 to $108 a flask.

# Metals

**Firmer Tone Develops in Copper Market but Dometic Demand Is Light—Zinc and Lead Steady**

**New York**—Demand for nonferrous metals has been light and price changes narrow in the past week. The minimum price on copper has firmed up from 10.50c to 11.50c, Connecticut, while the asking price of large producers has remained unchanged at 12.00c. Zinc eased a trifle more a week ago and has remained unchanged since then. Tin has been in a lifeless market with prices around 26.00c for spot metal.

New business has continued light in mill products, scrap, and brass ingot. In these materials, as in new metals, consumers recently bought well and are not interested in further purchases.

**Copper**—After a little improvement in domestic demand at 10.50c, Connecticut, those custom smelters who were offering at the low price took some business at prices up to 11.50c. All prices below 11.00c disappeared at the end of last month, so that the market now appears much firmer than at any other time in the past two weeks. Resale metal in the outside market has disappeared. Export business fell recently to almost nothing on account of the unusual divergence in domestic prices but on Monday export sales improved at 12.30c.

**Zinc**—Business has been done mostly at 4.07½c East St. Louis, after some business a week ago at 4.10c. Not much metal has been offered at the lower figure, and so it is said that a little buying would easily firm the market. The ore market remains unchanged at $26 a ton. High grade metal is unchanged at 1 cent premium over prime western.

**Tin**—New business has been light but the price has held well. It is so low that much resistance is shown to any weakening tendency. Domestic deliveries last month were 6270 tons, or much nearer normal than the current rate of consumption possibly could be when the tin plate and automobile industries are operating at less than half capacity. Evidently, metal has gone into invisible supplies, a part of which is held by consumers.

**Lead**—New business is confined to small lots for prompt shipment, but the market is firm. It is believed that November and December shipments will be larger than October, with production smaller.

**Nickel**—Contracts now are being made for next year's requirements at unchanged prices.

**Aluminum**—New business is small but prices are steady.—*Daily Metal Trade.*

## Coke By-Product Prices Likely To Be Renewed

**New York**—Coke by-product prices are unchanged and generally firm. Sulphate of ammonia has advanced 5 cents to the fertilizer trade. Output is still curtailed. Some producers are not anxious to book distillates too far ahead. Reports again are heard of a possible increase in price of benzol. While no announcement has been made regarding contract prices for next year, renewal of present levels on most items is considered likely. Phenol is moving better to the pharmaceutical trade. The undertone for solvent naphtha appears stronger.

## Coke By-Products

**Per Gallon, Producers' Plants, Tank Lots**

| | Spot |
|---|---|
| Pure benzol | $0.21 |
| 90 per cent benzol | 0.21 |
| Toluol | 0.30 |
| Solvent naphtha | 0.25 |
| Commercial xylol | 0.25 |
| **Per Pound at Producers' Plants in 250-Pound Drums** | |
| Phenol | 0.16 to 0.17 |
| **Per Pound at Producers' Plants** | |
| Naphthalene flakes | 3.75 to 4.75 |
| Naphthalene balls | 4.75 to 5.75 |
| **Per 100 Pounds Delivered** | |
| Sulphate of ammonia | $1.95 |

## Prices of the Week, Cents a Pound

| | Copper—Electro delivered | Copper—Lake delivered | Copper—Casting refinery | Straits Tin New York Spot | Straits Tin New York Futures | Lead N. Y. | Lead East St. L. | Zinc St. L. | Aluminum 98-99% | Spot Antimony | Ingot Nickel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nov. 26 | 10.50 | 12.12½ | 10.25 | 25.85 | 26.12½ | 5.10 | 4.95 | 4.07½ | 22.90 | 7.10 | 35.00 |
| Nov. 27—Holiday | | | | | | | | | | | |
| Nov. 28 | 10.62½ | 12.12½ | 10.50 | 25.90 | 26.15 | 5.10 | 4.95 | 4.07½ | 22.90 | 7.07½ | 35.00 |
| Nov. 29 | 11.00 | 12.12½ | 10.75 | 25.87½ | 26.12½ | 5.10 | 4.95 | 4.07½ | 22.90 | 7.07½ | 35.00 |
| Dec. 1 | 11.00 | 12.12½ | 10.75 | 26.00 | 26.25 | 5.10 | 4.95 | 4.07½ | 22.90 | 7.07½ | 35.00 |
| Dec. 2 | 11.50 | 12.12½ | 10.75 | 25.87½ | 26.12½ | 5.10 | 4.95 | 4.07½ | 22.90 | 7.12½ | 35.00 |

# Europe

**British Steelworks Aided by Overseas Structural Orders—Continental Markets Better**

**London**—(*By Cable*)—The outlook for Middlesbrough steelworks has been brightened considerably by important overseas engineering contracts requiring large tonnages of structural steel. Continental steel prices continue well below those in Britain. Tonnages of billets made on the Continent have been sold recently in the Midland and South Wales districts.

Demand for galvanized sheets is dull, while sales of tin plate have increased since the abandonment of price control and announcement of lower quotations. A slight improvement is noted in iron and steel business at Birmingham. Midland pig iron demand is small owing to reduced foundry operations.

In Germany domestic trade continues depressed while exports are tending to increase. The markets in France are fairly active. French pig iron producers report keen competition from England and the Saar. Prices in Belgium are firm and the recent improvement in demand is maintained.

## London Sees Better Situation in World Steel and Iron Markets

**London**—There are signs of a change in the aspect of the iron and steel export markets in Europe. From reports received from Continental centers it is apparent that steel prices have at last reached their lowest level, and the market now is firmer than for many weeks. The volume of inquiries also has shown signs of increasing, and there have been reports of orders taken for the account of British purchasers, particularly for Continental semifinished steel.

While this firmer tendency has been noted in the steel market, and, in fact, there has been a slight appreciation in prices for merchant bars and hoops and bands, there has been a substantial drop in pig iron prices, owing to the breaking up of the Franco-Belgo-Luxemburg entente, which followed immediately upon the disruption of the French pig iron syndicate. Previously business had been done slightly under the official prices quoted, but now Continental foundry pig iron is offered at about £2 10s ($12.10) f.o.b. Antwerp, while basic pig iron is £2 9s ($11.85).

### Orders Are Few in Britain

In Great Britain conditions continue unfavorable and, although there have been a number of inquiries from certain export markets, only a small amount has resulted in firm orders. Already the level of British prices is such that there is hardly any profit for manufacturers, and the steel association has not found it advisable to make any change, although black sheets have dropped from £10 to £8 15s ($48.50 to $42.35); consequently, a certain amount of Continental steel is coming into Great Britain at prices considerably lower than those quoted by domestic makers, but in view of the dullness of trade generally, the tonnage purchased is comparatively small, with the exception of semifinished steel.

### Pig Iron Competition Keen

The British pig iron market also is disturbed by cheap offers of Continental pig iron, and recently a new feature has been creating some agitation, imports of Manchurian pig iron on the northeast coast having been reported. Obviously, in overseas export markets British makers are meeting with the severest competition from Continental producers in view of the difference in prices, although some lines of high-quality products manufactured in Great Britain still find an outlet, as, for instance, hematite pig iron sold to Italy, Scandinavia, and even France, at a higher price than that of the competing product.

It is interesting to note that exports of pig iron from Great Britain in October were the highest since May, although still below the average of what would be considered the monthly exports for a normally prosperous year. It is probable that during recent months Continental users of this grade of British pig iron have let their stocks run down.

From the Continent it is reported that the slight improvement that was registered on the Brussels iron and steel exchange a week ago seems to be maintained. Beams constitute the only commodity for which prices have further depreciated; for all other products prices have remained fairly stable during the past two or three weeks, and merchant bars have gained 1s (24c) per ton, as they now are offered at between £3 19s and £4 ($19.20 and $19.40). Because French works are busy with domestic orders, they have not been competing so keenly against Belgian and Luxemburg producers. German works still take the attitude that they are out of the market, as they will not accept present low prices, but some transactions are, nevertheless, being made at prices which meet with competition from French, Belgian and Luxemburg producers.

It has been reported that some orders for ship plates have been received from Great Britain. The price for ship plates and boiler plates now is £5 17s 6d ($28.45). It has been noted during the past week that news from overseas markets is more satisfactory, especially in regard to the more troubled markets such as South America, India and China. Generally speaking, a slightly more optimistic feeling prevails than has been the case for a long time past.

## Belgian Market Shows Some Improved Conditions

**Brussels**—A slight improvement has appeared in the volume of orders placed on the Belgian iron and steel market, and also an increase in the volume of inquiries. These signs of improvement are restricted to small sections, and tonnages are not considerable. However, there was a distinct feeling that a slight change for the better had been felt.

In any case, prices have been much firmer, and concessions are not made as easily as in the past. French works are no longer in the market, with the exception of Hagondange, which concern has been seeking orders for structural steel. There are some serious inquiries from British buyers for semifinished steel, and prices discussed are slightly above the present level when it is a question of future deliveries.

Inside Belgium, mills are being only partially operated, and there is some unemployment in certain works. As a result of present conditions, the mixed national iron and steel committee dealing with wages has de-

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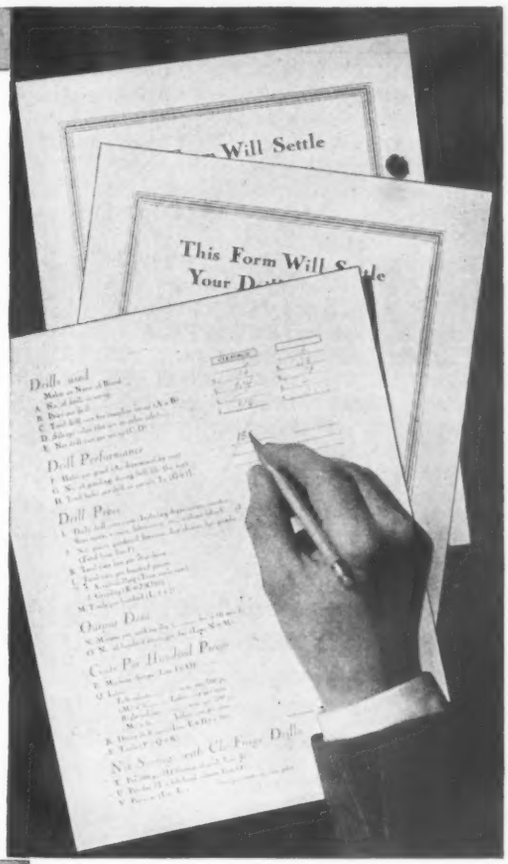


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cided that there shall be a reduction of 2½ per cent as from Dec. 1, and a second reduction of 2½ per cent as from Jan. 1, 1931, these decisions having been taken in agreement with the representatives of the works.

The price of foundry pig iron in the domestic market is 580 Belgian francs ($16.10), and the official price for export is £2 12s ($12.60) f.o.b. Antwerp. However, since the disruption of the Franco-Belgo-Luxemburg entente it is well known that business is transacted at a lower level. Basic bessemer pig iron is quoted at 460 francs ($12.80) for domestic business, and at the nominal price of £2 10s ($12.15) for export.

Blooms now are £3 2s ($15), 2-inch billets at £3 6s ($16), and sheet bars at £3 8s 6d ($16.60), but most producers refuse to sell sheet bars at that price. Merchant bars have changed hands at from £3 19s to £4 ($19.15 to $19.40), whereas the domestic price is 715 francs ($19.80). Beams are £3 11s ($17.20) for normal profiles and £3 12s 6d ($17.55) for British sizes, while hoops are quoted at £4 15s ($23) and steel strip, No. 26 gage, at £8 17s 6d ($43).

The plate and sheet market is dull. Five-millimeter plates are quoted at 840 francs ($23.30) in the domestic market and £3 16s ($18.40) for export. Plates 3/16-inch are £4 12s ($22.25), and galvanized corrugated sheets 5/10-millimeter are quoted at £12 ($58). There is little business in wire products. Galvanized wire is quoted at £7 5s ($35).

## British Output Drops

**London**—The number of furnaces in operation in Great Britain at the end of October was 96, compared with 104 at the end of September. Production of pig iron in October fell accordingly. October output of steel ingots and castings was 512,500 gross tons, compared with 580,600 tons in September, and 889,800 tons in October, 1929. Comparative figures follow, in gross tons:

(Gross tons)

| Mon. ave. | Act. Fur. on last day | Pig iron | Steel ingots and castings |
|---|---|---|---|
| 1913 | 338(*) | 855,000 | 638,600 |
| 1927 | 149 | 607,700 | 758,100 |
| 1928 | 132 | 550,900 | 710,400 |
| 1929 | 162 | 631,600 | 804,560 |
| 1930 | | | |
| Jan. | 159 | 560,000 | 771,100 |
| Feb. | 162 | 607,000 | 776,400 |
| March | 157 | 665,800 | 826,100 |
| April | 151 | 619,600 | 696,100 |
| May | 141 | 614,500 | 692,800 |
| June | 133 | 563,200 | 600,100 |
| July | 105 | 486,100 | 621,400 |
| Aug. | 104 | 416,700 | 451,300 |
| Sept. | 104 | 425,000 | 580,600 |
| Oct. | 96 | 415,000 | 512,500 |

(*) Average for year.

## French Trade Up in August

**Paris**—Exports of pig iron and other iron and steel products from France in August exceeded those of July. Imports also were increased over those of July. Comparisons follow, in metric tons:

| Mon. ave. | Imports Pig iron | Imports Other iron and steel products | Exports Pig iron | Exports Other iron and steel products |
|---|---|---|---|---|
| 1927 | 3,230 | 7,440 | 69,640 | 404,730 |
| 1928 | 3,365 | 8,320 | 52,215 | 368,410 |
| 1929 | 3,345 | 15,100 | 46,760 | 279,610 |
| 1930 | | | | |
| Jan. | 11,806 | 22,374 | 44,016 | 259,133 |
| Feb. | 20,463 | 24,965 | 44,977 | 297,208 |
| March | 16,747 | 28,024 | 42,522 | 269,752 |
| April | 15,195 | 25,347 | 41,630 | 277,886 |
| May | 15,803 | 23,020 | 39,576 | 263,606 |
| June | 12,715 | 24,261 | 43,046 | 291,279 |
| July | 10,847 | 21,167 | 45,706 | 207,023 |
| Aug. | 11,702 | 24,323 | 45,382 | 273,648 |

## Belgian Output Gains

**Brussels**—Belgian production of pig iron and of steel ingots and castings in September was slightly greater than in August but finished steel was a shade lower. Figures follow:

| Mon. ave. | Act. Furn. | Pig iron | Steel ingots and castings | Finished steel |
|---|---|---|---|---|
| 1913 | .... | 207,055 | 205,550 | 154,920 |
| 1927 | .... | 312,620 | 309,040 | 255,185 |
| 1928 | .... | 325,445 | 327,870 | 281,125 |
| 1929 | 58 | 341,330 | 344,370 | 296,370 |
| 1930 | | | | |
| Jan. | 58 | 343,380 | 340,200 | 296,220 |
| Feb. | 57 | 315,320 | 321,480 | 271,430 |
| Mar. | 57 | 341,820 | 359,150 | 258,770 |
| April | 56 | 313,250 | 312,550 | 252,150 |
| May | 54 | 299,510 | 294,160 | 240,900 |
| June | 51 | 265,290 | 252,680 | 204,590 |
| July | 49 | 259,750 | 263,980 | 209,060 |
| Aug. | 47 | 246,740 | 244,870 | 206,020 |
| Sept. | 46 | 250,630 | 254,280 | 202,970 |

# Current Iron and Steel Prices of Europe

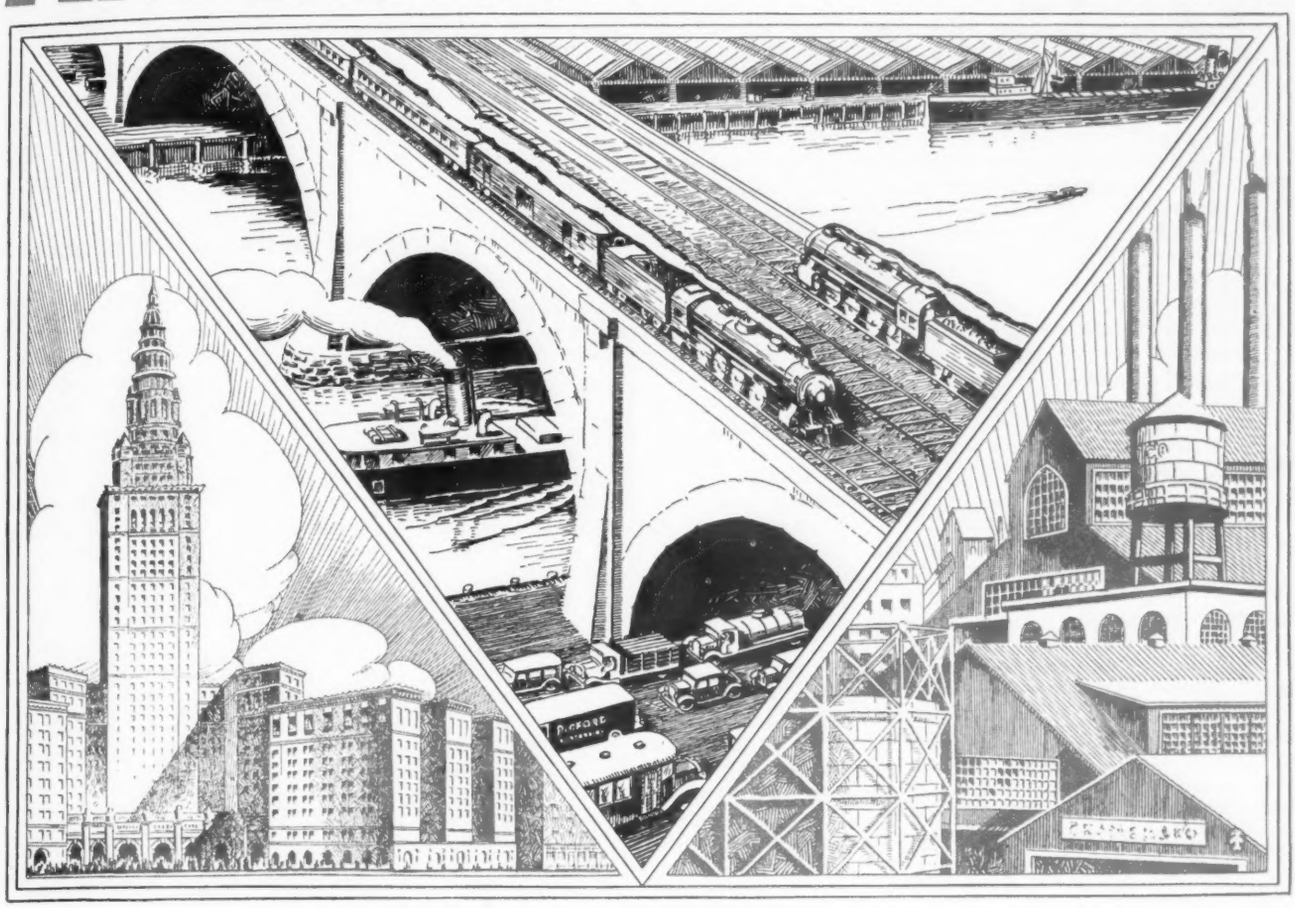
| Dollars at Rates of Exchange, December 1 | *British* Gross Tons U. K. Ports | | *French* Metric Tons Channel Ports | | *Belgium and Luxemburg* Metric Tons Channel Ports | | *German* Metric Tons Rotterdam or North Sea Port | |
|---|---|---|---|---|---|---|---|---|
| **Export Prices f. o. b. Ship at Port of Dispatch—By Cable** | | £ s d | | £ s d | | £ s d | | £ s d |
| **PIG IRON** | | | | | | | | |
| Foundry No. 3, Silicon 2.50-3.00 | $15.43 | 3 3 6* | $12.15 | 2 10 0 | $12.15 | 2 10 0 | $13.37 | 2 15 0 |
| Basic-bessemer | 15.92 | 3 5 6† | 11.66 | 2 8 0 | 11.66 | 2 8 0 | 13.37 | 2 15 0 |
| Hematite, Phosphorus 0.02-0.05 | 17.25 | 3 11 0 | ..... | ..... | ..... | ..... | 17.74 | 3 13 0 |
| **SEMIFINISHED STEEL** | | | | | | | | |
| Billets | $27.34 | 5 12 6 | $17.98 | 3 14 0 | $17.98 | 3 14 0 | $17.98 | 3 14 0 |
| Wire rods | 41.31 | 8 10 0 | 29.16 | 6 0 0 | 29.16 | 6 0 0 | 29.16 | 6 0 0 |
| **FINISHED STEEL** | | | | | | | | |
| Standard rails | $40.10 | 8 5 0 | $31.59 | 6 10 0 | $31.59 | 6 10 0 | $32.08 | 6 12 0 |
| Merchant bars | 1.68c | 7 15 0 | .95c | 4 6 0 | .95c | 4 6 0 | .92c | 4 4 0 |
| Structural shapes | 1.68c | 7 15 0 | .82c | 3 14 6 | .82c | 3 14 6 | .85c | 3 17 6 |
| Plates, ship, bridge and tank | 1.79c | 8 5 0 | 1.05c | 4 15 6 | 1.05c | 4 15 6 | 1.05c | 4 15 0 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 1.83c | 8 6 3 | 1.83c | 8 6 3 | 1.98c | 9 0 0 |
| Sheets, galvanized, 24 gage, corrugated | 2.44c | 11 5 0 | 2.35c | 10 13 9 | 2.35c | 10 13 9 | 2.31c | 10 10 0 |
| Bands and strips | 2.17c | 10 0 0 | 1.02c | 4 12 6 | 1.02c | 4 12 6 | 1.02c | 4 12 6 |
| Plain wire, base | 2.06c | 9 10 0 | 1.29c | 5 17 6 | 1.29c | 5 17 6 | 1.43c | 6 10 0 |
| Galvanized wire, base | 3.04c | 14 0 0 | 1.49c | 6 15 0 | 1.49c | 6 15 0 | 1.61c | 7 6 0 |
| Wire nails, base | 2.39c | 11 0 0 | 1.30c | 5 18 0 | 1.30c | 5 18 0 | 1.32c | 6 0 0 |
| Tin plate, base box 108 pounds | $ 3.89 | 0 16 0 | ..... | ..... | ..... | ..... | $ 8.26 | 1 14 0 |

| Domestic Prices at Works or Furnace—Last Reported | | | Francs | | Francs | | Marks | |
|---|---|---|---|---|---|---|---|---|
| Foundry No. 3 Pig Iron, Silicon 2.50-3.00 | $15.43 | 3 3 6 | $19.25 | 490(2) | $16.18 | 580 | $19.79 | 83 |
| Basic pig iron | 15.80 | 3 5 0 | 20.63 | 525(1) | 12.83 | 460 | 21.10 | 88.50 |
| Furnace coke | 3.16 | 0 13 0 | 6.60 | 168 | 5.02 | 180 | 5.13 | 21.50 |
| Billets | 27.95 | 5 15 0 | 21.62 | 550 | 17.02 | 610 | 28.01 | 117.50 |
| Standard rails | 1.79c | 8 5 0 | 1.46c | 810 | 1.61c | 1,240 | 1.47c | 136 |
| Merchant bars | 1.68c | 7 15 0 | .98c | 545 | .93c | 715 | 1.48c | 137 |
| Shapes | 1.84c | 8 10 0 | 1.12c | 620 | .88c | 675 | 1.45c | 134 |
| Plates, ship, bridge and tank | 1.95c | 9 0 0‡ | 1.37c | 760 | 1.05c | 810 | 1.65c | 153 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 2.63c | 1,460 | 2.41c | 1,850 | 1.36c | 126 |
| Sheets, galvanized 24 gage, corrugated | 2.52c | 11 12 6 | 3.74c | 2,075 | 2.73c | 2,100 | 3.67c | 340 |
| Plain wire | 2.06c | 9 10 0 | 1.85c | 1,025 | 2.15c | 1,650 | 2.34c | 217 |
| Bands and Strips | 2.17c | 10 0 0 | 1.24c | 690 | 1.43c | 1,100 | 1.72c | 159 |

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £12 5s 0d ($59.54) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

# AMERICAN SHEETS



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NATIONAL TUBE COMPANY
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UNIVERSAL ATLAS CEMENT COMPANY

*Pacific Coast Distributors*—Columbia Steel Company, Russ Bldg., San Francisco, Calif.

*Export Distributors*—United States Steel Products Company, 30 Church St., New York, N.Y.

# Machinery

WITH the general extension of the Thanksgiving holiday over the weekend, a distinctive picture of machine tool conditions does not exist this week. Inquiry appears to be holding up, but orders continue to be elusive. Builders and dealers are more resigned to poor business during December which is inclined to be a slow month even in good times. Thus far the principal effect of early introduction of 1931 model automobiles seems to have been the generation of some activity along small tool lines. The combination of small tools and machine tools, considered of doubtful value by many in the past, is proving its worth now.

**New York**—Machine tool equipment buying and inquiry continues sluggish. Sales are limited to a few scattered units, although a car builder bought four machines, including a drill and brake. Inquiry is spotty following a sight improvement. Some new equipment is being figured, but will not be closed until the new year. The remainder of 1930 is not expected to develop much volume.

While the opinion prevails that improvement will start early in 1931, the extent of the increase is uncertain, depending largely on general manufacturing conditions. Production rates tend to spread rather widely. Most of the larger units are doing little. On the other hand some smaller plants in the district are fairly active.

Detroit is reported to be showing more interest. With the exception of grinding equipment, however, little of this machine business has reached the East. Shipyards, while fairly active, are not taking equipment. Railroads are buying few tools, rarely more than one at a time. Overhead crane orders are off. Inquiry is slow, but in some quarters shows a slight improvement.

**Worcester, Mass.**—Excepting from machine tool builders themselves few orders are reaching the market. Grinders are quiet; lathes and drills are slack and inquiries are few. While the market has shown no gains in actual orders the trade is evidencing a better feeling that will soon develop into buying and selling, it is generally expected. No price changes impend.

**Pittsburgh**—Awards of machine tools still are few and usually involve only individual tools. Inquiry remains rather light. Railroads continue poor buyers with the only new inquiry being a list of 50 items from the Norfolk & Western railroad. This list includes considerable miscellaneous equipment with only a small number of machine tools involved. Westinghouse Electric & Mfg. Co. continues inactive in new tool purchases.

**Cleveland**—With the Thanksgiving holiday extended over the weekend in many cases, it has been somewhat more difficult than usual to get a distinctive picture of conditions in the machine tool business during the past week. It is safe to say, however, that orders have not increased in number, even though inquiry continues active—more active in many cases than in previous weeks. Scarcity of orders during December is to be expected, as even in normal times this is inclined to be a dull month, due to inventory taking and a general winding up of 1930 business.

Manufacturers of small tools report a fair amount of business, part of which is due to tooling up for production of new models of automobiles. Dealers carrying both machine tools and small tools are finding this to be a rather happy combination, as the small tool business warrants keeping salesmen on the job who at the same time are able to do valuable missionary work along machine tool lines. Activity along engineering lines, which has been mentioned in several previous reports, continues unabated. The new year will bring some important new developments in machine tools.

**Chicago**—November as a machine tool sales month in this district was one of the low points in the year. A few more single-tool inquiries developed in the last week, but sales were decidedly slow. This was due in part to the Thanksgiving holiday, as a number of manufacturing operations were down Friday and Saturday also. Despite this slowing down, orders for supplies, parts and accessories were fair. Several light manufacturing plants bought presses, and a number of used tools were sold. Several houses are working on the Illinois Steel Co. inquiry of about a dozen items. Few important programs are in prospect now, except the Lane Technical high school. The latter inquiry may be out in the next few weeks, as estimates are in. Buyers exert some pressure against prices, but on the whole prices are holding. A list of tools of the Cowles Fire Escape Works, and another production tool list of Paul E. Johnson, supplies, was sold at mortgage auction this week.

## Crane Business in October Fell Below September

New York—Shipments and new orders for electric cranes during October again declined in comparison with the previous month, with a corresponding drop in values, according to the Electric Overhead Crane institute. Unfilled orders on Oct. 1 were also lower than on Sept. 1. Shipments in October totaled 66 units with a tonnage capacity of 876¼, valued at $676,649. This compared with 69 units, tonnage capacity 1550½, valued at $941,570, in September.

New orders in October included 45 units, tonnage capacity 707, with a value, $352,680.75. In September new orders totaled 52 units, tonnage capacity, 1508¼, valued at $614,070. Unfilled orders on Oct. 1 were 149 units with a tonnage capacity of 4047, valued at $1,947,880.43. On Sept. 1 unfilled orders were 154 units, with a tonnage capacity of 4035¾, valued at $2,123,598.68.

## Wear Resistance of Metals Increases with Hardness

Resistance to wear of normalized, annealed, hardened, or tempered carbon steels was shown to increase with the hardness of the metals during tests carried out by the bureau of standards, Washington, and reported in research paper No. 214, "The Resistance of Steel to Abrasion by Sand," Samuel J. Rosenberg. Increasing the temperature of annealing resulted in a slight increase in resistance to wear, the increase being more marked in low-carbon than in high-carbon steel.

A study was made of the adaptability of three types of apparatus, namely, the ball mill, the sand blast, and the brinell machine. The ball mill was generally unsatisfactory; the sand blast gave consistent results but did not differentiate between the materials tested, apparently because of the fact that the abrading conditions were not sufficiently severe; but the brinell machine proved to be generally satisfactory. Copies of research paper 214 may be obtained from the superintendent of documents, Washington, for 15 cents.

# Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

## New England

HARTFORD, CONN.—City advises through Roscoe N. Clark, city engineer, that bids to be received Dec. 9 for equipping the South Meadows pumping station will include four vertical pumps, each of 30,000 gallons per minute capacity at 24-foot head, driven by vertical synchronous motors with separate excitation. Building to house equipment has not yet been designed. (Noted Nov. 20.)

BOSTON—Cambridge school commission plans to build a technical school at a cost of about $1,500,000, to be located at Broadway, Felton and Cambridge streets.

CLINTON, MASS.—Sanford's Inc. has been incorporated with 500 no par shares by Albert Reed, to deal in machinery and appliances.

## New York

BROOKLYN—Chester Auto Body & Wagon Works has been incorporated by J. E. Rose, 435 Rockaway avenue.

BROOKLYN—Wolkow Sheet Metal & Roofing Co. has been incorporated by L. L. Levine, 215 Montague street, to deal in building materials.

BROOKLYN—Sun Glo Lamp Works has been incorporated by Borowsky & Barrows, 305 Broadway, New York, to make electrical appliances.

BROOKLYN—Department of water, gas and electricity, municipal building, New York, will build a 2-story pumping station at Neptune avenue and Bay View street, at a cost of about $150,000. D. M. Metcalfe, Huntington, L. I., N. Y., is engineer.

BUFFALO—Eureka Metal Products Corp. of New York has been incorporated with $2000 capital by M. McK. Taylor, Niagara Falls, N. Y., to deal in metal products.

BUFFALO — Houde Engineering Corp., 537 Delavan avenue, is considering expansion of facilities for an increase in output of shock absorbers. Company also is considering construction, maturity indefinite, of a plant addition which would double present capacity.

CANASTOTA—City will vote soon on a proposed $350,000 bond issue for the construction of a new water plant and pipe line.

NEW YORK—Union Wire Die Corp., 333 West Fifty-second street, is arranging for manufacturing space for the manufacture of tools and dies.

NEW YORK—General Metal Spinning & Stamping Co. has been incorporated with $20,000 capital by D. H. Cohn, 291 Broadway.

NEW YORK—Jaray Streamline Corp. of America has been incorporated with 3000 common shares by H. Escher, 14 Wall street, to deal in machinery.

NORTH HEMPSTEAD—Steel Motors Tankers Corp. has been incorporated with 1000 common shares by Foley & Martin, 64 Wall street, New York, to deal in watercraft.

## Pennsylvania

AMBRIDGE—National Electric Products Corp., 233 Broadway, New York, is considering expansion of its facilities and additional manufacture of copper products. Cost is estimated at $40,000.

HANOVER—Eastern Valve Co. advises through J. V. Emig that the company has sufficient equipment and machinery for present needs. Company was formed to take over the Eastern Valve Co. and to manufacture automobile replacement valves. (Noted Nov. 13.)

PHILADELPHIA — Warren - Webb Inc. has been incorporated with $25,000 capital by Nelson J. Tarbottom, 8 Beech avenue, Alden, Pa., to manufacture and deal in motors, vehicles, airplanes and tools.

PHILADELPHIA—William H. Horst has awarded contract to Southern Construction Co., Fifty-ninth and Market streets, for the construction of a workshop at 3030 Frankford avenue. Estimated cost, $3500.

PITTSBURGH—U. S. Engineers office will receive bids until Dec. 19 for a hydroelectric plant for lock No. 8 on the Allegheny river.

YORK—Norway Mfg. Co. has been incorporated with $100,000 capital by William H. Stough, 933 North Duke street, treasurer, to manufacture and deal in electrical and mechanical appliances and equipment, and castings, tools and specialties.

## New Jersey

BAYONNE—National Electric Products Corp., 233 Broadway, New York, is considering establishment of a plant here for the manufacture of copper products. Maturity is indefinite. Estimated cost, $40,000.

NEWARK—Edison Combustion Co. has been incorporated with $100,000 capital by Robert P. Silberman, 1060 Broad street, to manufacture machinery.

NEWARK—Sander Mfg. Co., 298 Eighth avenue, has plans for a 1-story, 45 x 92-foot addition to its machine shop. Approximate cost, $20,000. Company makes meat chopping machines and parts.

NEWARK—United Tool & Die Works Inc., whose incorporation recently was noted, advises through Thomas G. Walker, secretary, 24 Branford place, that an equipped plant has been leased for the manufacture of dies, gages, jigs and fixtures. Frederick P. Bollinger is president. (Noted Nov. 27.)

NEW BRUNSWICK—Motor Parts & Machine Co. has been incorporated with 1250 common shares by Heston N. Potts, to deal in motors.

## Ohio

CANTON—Bosshardt Steel Corp., Allen avenue southeast, is taking bids for

## Exports of Metalworking Machinery

| | — October — | | January through October | |
|---|---|---|---|---|
| | 1930 | 1929 | 1930 | 1929 |
| Engine lathes | 37 | 100 | 987 | 763 |
| Turret lathes | 32 | 28 | 384 | 423 |
| Other lathes | 21 | 82 | 573 | 835 |
| Vertical boring mills and chucking machines | 17 | 6 | 283 | 188 |
| Thread-cutting and automatic screw machines | 39 | 102 | 592 | 868 |
| Knee and column-type milling machines | 20 | 58 | 289 | 419 |
| Other milling machines | 31 | 41 | 620 | 564 |
| Gear-cutting machines | 4 | 31 | 343 | 397 |
| Vertical drilling machines | 18 | 26 | 435 | 353 |
| Radial drilling machines | 3 | 8 | 146 | 97 |
| Other drilling machines | 76 | 228 | 1,403 | 1,905 |
| Planers and shapers | 4 | 22 | 289 | 424 |
| Surface grinding machines | 3 | 24 | 164 | 225 |
| External cylindrical grinding machines | 20 | 53 | 466 | 687 |
| Internal grinding machines | 20 | 53 | 288 | 403 |
| Tool grinding, cutter grinding, and universal grinding machines | 82 | 64 | 1,442 | 1,194 |
| Pneumatic portable tools | 1,175 | 2,376 | 16,128 | 21,445 |
| Chucks for machine tools | 694 | 1,451 | 19,624 | 17,784 |

the building of furnaces and installation of machinery. Operations will start March 1 with two furnaces and later will require 12. Company will produce thin steel castings, using the Bosshardt process. Walter J. Willis is vice president in charge of production. (Noted Oct. 16.)

CINCINNATI—Young & Bertke Co., sheet metal worker, 2237 Spring Grove avenue, has acquired a plant at 1040 Hulbert avenue, formerly occupied by the Eureka Brass Foundry Co. Unit is 103 x 125 feet.

CINCINNATI—Lunkenheimer Co., Beekman and Tremont avenues, manufacturer of engineering specialties and brass products, has awarded contract to Fischer Devore Construction Co. for a $7000 plant addition.

CINCINNATI—Heekin Can Co., 435 New street, plans to build a plant at Park and Forest avenues, in Norwood, a suburb. Structure will be 127 x 161 feet, 4 stories. Ferro Concrete Construction Co., Third and Elm streets, is engineer and contractor. Plans are now being made.

CINCINNATI—Colonial Stages, Interstate Transit Corp., will build a garage and maintenance plant at Twelfth and Sycamore streets, at a cost of $400,000. Facilities will include electrical, blacksmith and machine shops and electrical welding and metalworking departments. Carl S. Warner is president.

CINCINNATI—Buckeye Foundry Co., 2257 Buck street, advises through R. J. Redmond, secretary, that contract has been awarded to D. Meinken Sons Co., 2143 Barnard street, as noted, for a 1-story foundry, 120 x 280 feet, with center bay 35 x 50 feet and two other bays 35 x 35 feet. Contract also includes a 3-story pattern storage and office building, 50 x 140 feet. New plant will be occupied next spring. Company manufactures light, medium and heavy gray iron and semi-steel castings. Private switch the length of the foundry eventually will be served by a yard crane. (Noted Nov. 27.)

LANCASTER—City council is considering the establishment of a municipal light and power plant.

LIMA—Lima Armature Works, 114 Water street, whose plant recently was noted as having been damaged by fire, has established a temporary office for rebuilding the works. Fire destroyed practically all machinery and patterns. Loss is estimated at $40,000. Homer Reeder is president of the company, which manufactured electric motors and a special type of magnetic separator. (Noted Nov. 27.)

LORAIN—Board of control will receive bids soon for two 420-horsepower diesel generators and for four 24 million gallons-per-day pumps. Cost is estimated at $97,000.

TIFFIN—C. G. Hertzer, 154 Main street, advises that machine shop recently noted as being erected for his occupancy will contain several lathes, shapers, drill presses, and one milling machine. Line of manufacture includes a new type of pulley block and a special ice cream dipper. (Noted Nov. 27.)

TOLEDO—Gulf Refining Co., which recently acquired Paragon Refining Co., has building permits for a $5,000,000 expansion program. Hughes-Foulkrod Construction Co., 421 Seventh avenue, Pittsburgh, will build a boiler house, industrial units, pump houses and storage sheds. Alphons-Custodis Chimney Construction Co., 140 South Dearborn street, Chicago, has contract for construction of another boiler house.

TOLEDO—Industrial department, chamber of commerce, Robert J. Eustace industrial commissioner, recently announced expansion plans for the year in Toledo's industrial firms. Included are: Proposed new plant for the Air Scale Co., 810 Broadway; addition to the Brown Alloy Works, 3620 Summit street; an addition and possibly a new plant, for the Benney Castings Co., 1805 Clinton street; a new plant for the Blue Flame Gas Range Co., 419 Dorr street. Various degrees of expansion will be undertaken by other firms, according to the report: Baer Pattern & Castings Co., 2465 Albion street; Belmont Foundry, 1213 Belmont avenue; Bunting Brass & Bronze Co., 715 Spencer street; Burt Foundry Co., 836 Bush street. Total expenditures will amount to approximately $500,000.

WAYNESBURG—Whitacre-Greer Co. proposes to rebuild its 2-story plant, recently damaged by fire. Approximate cost, $40,000. Plans are private.

## Indiana

MILAN—Cloud Coupe Air Craft & Motors Corp. has been incorporated with $30,000 capital by William B. Harrington to manufacture and sell airplane motors and appliances.

## Michigan

BAY CITY—City electric light department is considering the construction of a generating plant.

DETROIT—Detroit Mailing & Binding Co., 3128 West Grand River, will build a shop building on Fourth avenue. Cost is estimated at $65,000.

DETROIT—Marks Lissberger & Son Inc., Long Island City, N. Y., dealer in metals, is reported to have acquired a site of 320 acres in the Detroit area, at King and Telegraph roads.

DETROIT—Salter Corp., 1712 West Jefferson street, has been incorporated with 1000 no par shares by Frank S. Salter, to manufacture and deal in machinery, tools and mechanical equipment.

DETROIT—Lodge Motors Inc., 2730 Union Trust building, has been incorporated with 5000 no par shares by Joseph B. Lodge, to make, repair and deal in motors.

DOWAGIAC—Dowsett Spring Co. is completing a plant for the manufacture of coil springs. Building will contain 2000 square feet of floor space. Fred R. Dowsett, general manager of the Beckwith Co., stove manufacturer, is interested in the company.

MONROE—A group of academy buildings, to include a power plant, will be built here by the Sisterhood of the Immaculate Heart of Mary. Bohland & Son, Indianapolis, Ind., are architects. Total expenditure will be between $2,000,000 and $3,000,000.

PORT HURON—Port Huron Sulphite & Paper Co. will construct a power house within about six months. Estimated cost is reported at $400,000.

ROYAL OAK—Jiffy Electric Co. has been incorporated with $25,000 capital by Joseph Ambroy, 842 Maxlow avenue, to manufacture and sell electric water heaters and electrical devices.

## Illinois

CHICAGO—Fred W. Gehrer, manufacturer of metal products and specialties, 3264 West Grand avenue, will build a plant addition, 80 x 82 feet, and will purchase equipment. Chicago Industrial Construction Co., 53 West Jackson boulevard, has the general contract.

CHICAGO—Cornell Johnson Forge Co., whose incorporation recently was noted, advises through A. M. Cornell, president, that the company will produce small drop forgings, up to eight pounds. Offices are located at a plant which has been leased at 1659 West Seventy-fourth place. Principal equipment has been purchased. (Noted Nov. 13.)

CHICAGO—First Caisson Machinery & Boring Co., whose incorporation recently was noted, advises that officers are as follows: E. H. Seibel president; A. N. Weeber, secretary and treasurer; H. Satre, vice president. Company is in experimental stages and will announce later its program. Company may be reached through the president, 214 West Ohio street. (Noted Nov. 20.)

## Southern States

WILMINGTON, DEL.—General Stove Corp. has been incorporated with 100 common shares by Corporation Trust Co., to make heating devices.

WILMINGTON, DEL.—Sterling Automotive Products Corp. has been incorporated with 25,000 common shares by Corporation Trust Co., to make automatic and automotive air valves.

WASHINGTON—A. L. Flint, general purchasing officer for the Panama canal, will receive bids Dec. 10 for water-tapping machine, surfacing machine, variety saw, and other items, on schedule 2609.

WASHINGTON—J. E. Hurley, 1219 Ohio avenue northwest, will build a 1-story shop, 77 x 93 feet, on Half street southeast, near K street. George Santmyers, 1418 I street, is architect.

MIAMI, FLA.—Safety Aircraft Corp. has been incorporated by H. P. Emer-

son, 469 Northeast Sixty-ninth street, to deal in aircraft.

TAMPA, FLA.—Plant Implement Co. has been incorporated with $100,000 capital by J. S. Gale, 5402 Central avenue.

CORNELIA, GA.—City will build a pumping station in connection with a proposed new waterworks system. Robert & Co., Bona Allen building, Atlanta, Ga., is engineer.

CLINTON, LA.—Board of aldermen will award contract soon for construction of waterworks improvements and for tank and pumps. F. P. Joseph, Glenmore, La., is engineer. Estimated cost, $27,000.

NEW ORLEANS—Orleans Levee board, John Klorer chief engineer, is completing plans for construction of a $1,500,000 airport on Lake Pontchartrain, which will include a machine shop and about 20 hangars. Two will be 200 x 300 feet and the others 100 x 150 feet.

BALTIMORE—Demco Inc., 105 South Calvert street, will occupy a plant recently acquired at Bush and Nanticoke streets. Unit is of two stories, and contains 35,000 square feet of floor space. Company does general and experimental machine work. James F. Myrick is president.

COLUMBIA, MISS.—Dorgan-McPhillips Packing Co., Mobile, Ala., will erect a canning factory here, to include a machine shop and boiler house. A. J. Kessler is chief engineer in charge of construction.

CHATTANOOGA, TENN.—M. B. Parker, 1912 Oak street, wants prices and data on a screw-cutting engine lathe, 22 or 24-inch, and a shaper vise for use on a 25-inch shaper.

JACKSON, TENN. — Smith Motor Coach Co. is building a maintenance depot here. Plans are by Jones & Furbringer, Memphis, Tenn. Approximate cost, $50,000.

MEMPHIS, TENN.—Southern Steel & Iron Works Inc. has been incorporated by B. W. DuBose and L. V. DuBose, to operate an iron works.

NATURAL BRIDGE, VA.—John Temple, resident director, Natural Bridge of Virginia Inc., is in the market for a 100-kilowatt, 60-cycle, 3-phase, 2300 volts alternating current generator set, driven by crude oil engine.

## Missouri

CLARKTON—City will take bids soon for a vertical turbine pump and one 50,000-gallon tank on a 125-foot tower. W. A. Fuller Co., 2916 Shenandoah avenue, St. Louis, is engineer.

ST. LOUIS—A. Kilpatrick & Sons Foundry Co., Corrie and Bulwer avenues, recently sustained $15,000 equipment loss when fire damaged its plant. Total loss is estimated at $20,000, principally on patterns.

## Oklahoma

OKLAHOMA CITY—Century Petroleum Co., Petroleum building, plans erection of a refinery with repair shop and boiler room facilities, costing $100,000. J. B. Wrather is superintendent in charge of construction.

TULSA — City, Victor Cochrane, Wright building, consulting engineer, plans an addition to its pumping station, including three pumps of 12,000,000 gallons capacity, and auxiliary equipment. Addition is to be 32 x 60 feet. Estimated cost, $50,000.

## Texas

AUSTIN—Everts Aero Motors Inc. has been incorporated with $25,000 capital by W. W. Everts, to manufacture motors.

AUSTIN—Economy Street Marker Co., Littlefield building, is inquiring for prices and data on die casting machines, to be used for the production of ¼, ½ and ¾-pound aluminum alloy castings.

EL PASO—Linde Air Products Co., Carbide & Carbon building, New York, plans to erect an oxygen manufacturing plant here, at a cost of $100,000.

GALVESTON—Private Electric Utilities Co. contemplates additions to its power plant here. Burns & McDonnell Engineering Co., 406 Interstate building, Kansas City, Mo., is engineer.

HOUSTON—Continental Wirebound Box Co., Maury avenue and Campbell street, plans to build a 1-story plant addition at a cost of $14,000.

HOUSTON—General Machinery Co. Inc. has been incorporated by L. C. Doney Jr., 2522 Calumet street.

## Wisconsin

BARABOO—J. C. Haimerl and F. F. Koehler, Waukesha, Wis., formerly associated with Glancy Malleable Corp., have purchased a plant here formerly used as a roundhouse and will open it for production of gray iron and aluminum castings. Machine shops and blacksmith shops are included in the plant.

BEAVER DAM—F. Rassman Mfg. Co., whose plant recently was noted as having been damaged by fire, advises through H. C. Rassman, secretary, that its foundry unit, 60 x 148 feet, is being rebuilt. Equipment has been ordered. (Noted Nov. 27.)

MILWAUKEE — Sewage commission will receive bids Dec. 13 for equipment to be installed in the sewage disposal plant. Motors are included. Estimated cost, $50,000.

## Nebraska

LINCOLN — International Harvester Co., 606 South Michigan avenue, Chicago, is reported to be ready to let contract for an assembly and distribution plant here. Estimated cost, $125,000. W. D. Price, care of the company, is in charge.

## Montana

BILLINGS—A. N. Eaton Metal Products Co. has let contract for the construction of a 1-story plant. Estimated cost, $30,000. Company manufactures steel culverts for roads.

## Nevada

LAS VEGAS—Department of interior, bureau of reclamation, Washington, will complete specifications and call for bids soon in connection with the Hoover dam project. Total estimated cost, $103,000,000. Project will involve extensive power facilities and maintenance needs during construction will call for metal-working facilities.

## Arizona

TUCSON—Tucson Gas, Electric Light & Power Co. plans power plant extensions, and will install a 100-horsepower diesel engine unit and other equipment.

## Pacific Coast

BERKELEY, CALIF. — City has awarded contract to George A. Scott, 47 Oakvale street, for construction of a shop building for the corporation yard.

BERKELEY, CALIF.—Everite Mfg. Co. Inc. will manufacture a patented traffic signal for commercial vehicles. Company has established temporary quarters at 3144 College avenue. Joseph D. Stafford is president and M. J. Engelhardt is secretary.

CORNING, CALIF.—Corning Union high school district, L. Winkenhofer clerk, is inquiring for shop equipment for new buildings. Plans are by Starks & Flanders, Forum building, Sacramento, Calif.

LOS ANGELES—J. G. Olin and W. H. Wright have started operations at 10800 South Main street, engaging in machine work and welding.

LYNWOOD, CALIF.—Commercial Welding Works, Norton avenue, is reported to be constructing a plant addition.

SAN FRANCISCO — University of California is to build a power house at Third avenue and Parnassus street. William C. Hays, Crocker First National Bank building, architect, has completed plans.

SAN FRANCISCO—City has awarded contract for hangar extensions at Mills field, municipal airport, to Clinton-Stephenson Co., Monadnock building. Bureau of engineering, city hall, has plans.

WILMINGTON, CALIF.—Uhlin Machine Works, E. R. Uhlin manager, is building a new plant at 320 West B

street. Company engages in welding and machine work, specializing in yacht and steamship repair.

## Dominion of Canada

NEW WESTMINSTER, B. C.—Westminster Boiler & Tank Co. is a new enterprise here, with plant located at 1103 Columbia street. Company is managed by W. Blackburn and J. Ion.

MINTO, N. B.—New Brunswick Electric Power commission, 55 Canterbury street, St. John, N. B., advises through E. J. Owens, purchasing agent, that principal equipment for the power plant being erected here has been secured. Additional items are in charge of the consulting engineers, United Engineers & Constructors, 1001 Dominion Square building, Montreal, Que. Contractors are John Flood & Sons of St. John. (Noted Nov. 27.)

HAMILTON, ONT.—S. H. Kent, city clerk, is receiving bids for the erection of a 3-story addition to the municipal machine shop, on Elgin street. Estimated cost, $50,000.

HAMILTON, ONT.—Dynes Electrical Co. Ltd. has been incorporated with $50,000 capital by Charles G. Dynes, 21 Main street east, to manufacture and deal in electrical machinery and apparatus.

LONDON, ONT.—National Casket Co., 107 Niagara street, Toronto, Ont., will equip a plant addition here for the manufacture of steel caskets. Estimated cost, $50,000.

OSHAWA, ONT.—Coulter Mfg. Co., subsidiary of Coulter Copper & Brass Co. Ltd., 115 Sumach street, Toronto, Ont., recently noted as planning to locate here, is having plans prepared by C. C. Stenhouse, Oshawa, for the erection of a 1-story plant to be built on Simcoe street south. (Noted Nov. 27.)

OTTAWA, ONT.—City council proposes to build combined workshops and garage on Bayview road at a cost of about $200,000. A. F. McCallum, city hall, is commissioner of works.

ROCKLAND, ONT.—Town council is considering purchase of the present waterworks plant and installation of motors and other equipment, to cost $40,000. C. W. A. Marion is clerk.

TORONTO, ONT. — Willys-Overland Ltd., Weston road, will build a plant addition, 35 x 190 feet, immediately. Estimated cost, $12,000.

TORONTO, ONT.—Board of education is considering a proposal to build a shop addition to Central Technical high school and to construct a new vocational school.

TORONTO, ONT.—Berkel Products Co. Ltd., 125 York street, has completed extensions to its manufacturing plant, adding over 1000 square feet of floor space.

WESTBORO, ONT.—Nepean township, John Gamble clerk, will award contracts soon for construction of a pumping station.

MONTREAL, QUE.—Canada Wire & Cable Co. Ltd., 940 Inspector street, has awarded contracts for a $175,000 plant, 100 x 650 feet, one story.

MONTREAL, QUE.—Canadian Benedict Stone Ltd., 6096 Lafontaine street, plans to purchase ten 187½-horsepower electric motors and one 80 horsepower steam boiler.

MONTREAL, QUE.—Lynn Canadian Products Ltd. has been incorporated with $200,000 and 15,000 no par shares by C. R. McKenzie, 693 Grosvenor street, to manufacture and deal in bronze, brass, copper, zinc and other metals.

MOUNT LAURIER, QUE.—Town council is considering additions and improvements to its power plant and system. Turbines and generators will be installed. S. Ouimet, 706 St. Gabriel street, Montreal, Que., is engineer. Total cost of the project is estimated at $260,000.

ST. CESAIRE, QUE.—R. Dassault will improve the waterworks plant and install one 600-gallon centrifugal pump, gasoline engine, electric motors and pumping equipment.

# New Trade Publications

WELDING ACCESSORIES—Fusion Welding Corp., Chicago, in a current bulletin lists its accessories for use of the welder, including, gloves, helmets, lenses, holders and other articles.

OVENS—Despatch Oven Co., Minneapolis, in bulletin No. 12 describes its special and intermittent conveyor ovens. Illustrations show a number of installations designed and built for various purposes in industrial works.

V-DRIVE—Worthington Pump & Machinery Corp., Harrison, N. J., is circulating a leaflet calling attention to its multi V-drive for efficiently connecting motor and machine, giving positive drive and minimizing loss of power.

BALL BEARINGS—Norma-Hoffman Bearings Corp., Stamford, Conn., in a current bulletin describes its felt-protected anti-friction ball bearings for industrial use. Tables of sizes, dimensions, load ratings and mounting dimensions are given.

FLOWMETER — Brown Instrument Co., Philadelphia, has hit on an interesting mechanical device for demonstrating the operation of its flow meter, on the inductance bridge principle. This is being distributed to power and industrial plant officials.

THREADING MACHINES—A bulletin, No. D-65, has been issued by the Landis Machine Co. Inc., Waynesboro, Pa., describing two sizes of its pipe and nipple threading machines. Data and illustrations give full information on the machines.

UNIT HEATERS—Buffalo Forge Co., Buffalo, in its catalog No. 469, covers five types of unit heaters for all heating purposes. Illustrations show the units and detailed drawings show construction and operation. Instructions are given to aid in choice of the proper type for a given use.

GEARS—A catalog from the Ohio Gear Co., 1333 East 179th street, Cleveland, is arranged to give complete information on the wide range of stock gears carried by the company. Formulas and information of value to the engineer are included for the design and adaptation of gearing and reduction units.

VEGETABLE OILS — Spencer-Kellogg & Sons Corp., Buffalo, N. Y., stresses the importance of a more personal and friendly basis for industrial dealing in a bulletin entitled, "I Wish We Knew Each Other Better." The facilities of the company are outlined and its services described in supplying vegetable oils, including core oils.

ELECTRICAL DEVICES — General Electric Co., Schenectady, N. Y., has issued a number of bulletins on various products: Hand starting compensators for squirrel-cage induction motors; magnetic switch; automatic full-voltage controllers; oil circuit breakers; resistor arc welders; fan-cooled induction motors; explosion chambers; automatic switchgear.

WELDERS — A bulletin by the Thompson-Gibb Electric Welding Co., Lynn, Mass., and Bay City, Mich., describes its special copper solidification machine, which solves many problems for manufacturers of electrical equipment.

INDUSTRIAL WINDOWS — Campbell Industrial Window Co. Inc., Pershing Square building, New York, has issued two bulletins dealing with its pivoted industrial windows and its projected windows for commercial and architectural use. Detailed sectional drawings and diagrams of various types present the entire line. A form of specifications for use of architects is included.

VIBRATING SCREENS — Featuring its Leahy vibrating screens for wet or dry screening of materials, Deister Concentrator Co., Fort Wayne, Ind., has issued an illustrated bulletin, No. 12-E. A complete description of the screens is given, including engineering and design details, with illustrations of the equipment in typical industrial applications. The screens are supplied from a 3-inch opening down to 100-mesh, and points of superiority are shown for various screening jobs including clays, silica sand, and foundry sand.